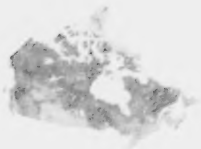
Ressources naturelles Canada | Natural Resources Canada



Natural Resources Canada

2011-12

Departmental Performance Report

The Honourable Joe Oliver

Minister of Natural Resources

Canada

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Minister's Message

I am pleased to present the *Departmental Performance Report* for Natural Resources Canada (NRCan) for the reporting period ending March 31, 2012.

Canada has emerged from the global economic downturn in a strong and competitive position, ready to face the future. Implementation of the Government's *Economic Action Plan* helped position the country's natural resource sectors to increase business investment, create high-paying jobs for Canadians, and contribute to overall economic benefits. Over the past year, Canada's natural resource sectors played a vital role in our economy. The energy, mining and forest sectors directly and indirectly drive almost 20 percent of Canada's economic activity. They also provide 10 percent of the jobs in Canada by employing 800,000 Canadians, with an additional 800,000 people employed by industries that service these sectors.

At the moment there are well over 600 major resource projects under way or planned across Canada, representing a potential investment of close to $650 billion over the next 10 years. These projects will benefit communities large and small, and promise jobs, opportunities and better lives for Aboriginal Canadians, for young people looking to start a career in the skilled trades, and for small businesses that support the development of natural resource sectors. With the launch of the plan for *Responsible Resource Development*, the Government of Canada has moved toward a more effective and efficient regulatory process for these major resource projects. The goal is one project, one review, in a defined timeline. These efforts will help Canada develop its tremendous natural resources for the benefit of Canadians from coast to coast to coast while also strengthening our world-class environmental protection regime.

We have also helped to expand markets and diversify global partnerships by promoting Canada as a responsible and reliable natural resource supplier and by helping wood producers diversify their export markets to key economies, such as China, Japan, India and South Korea. In addition, the Government continued to promote and accelerate energy efficiency activities and the development of innovative energy technologies.

Investments in innovation helped industry to develop new forest products and mining processes and to advance technologies that improve the environmental performance of Canada's natural resource sectors. In Canada's North, geo-mapping and geoscience work contributed to prosperity and job creation, particularly in the mining sector. NRCan also provided expertise for Canada's efforts to support our sovereignty in the Arctic.

I am proud of the integral role NRCan has played this year in advancing the Government's key priorities particularly as they relate to jobs, growth and long-term prosperity for all Canadians. The Government will continue to secure Canada's economic and environmental progress through the responsible development of our natural resources.

The Honourable Joe Oliver
Minister of Natural Resources

Section I: Organizational Overview

Raison d'être

NRCan's vision is to improve the quality of life of Canadians by creating a sustainable resource advantage. It seeks to achieve this vision by working to improve the competitiveness of the natural resource sectors and to grow their contribution to Canada's economy; by supporting the sustainable development of Canada's resources in a manner that advances the country's global standing as a leader on the environment; and by using its knowledge and expertise of Canada's landmass to support the safety and security of citizens.

Responsibilities

The Minister of Natural Resources is specifically responsible for, or has responsibilities under, more than 30 Acts of Parliament[1]. The Minister's core powers, duties and functions are set forth in the *Department of Natural Resources Act*[2], the *Resources and Technical Surveys Act*[3], and the *Forestry Act*[4]. NRCan also works in areas of shared responsibility with the provinces.

Within the Government of Canada, the Minister of Natural Resources also has responsibilities for the natural resources portfolio[5], which includes the following:

- Atomic Energy of Canada Limited[6] (AECL);
- Two independent regulators: the National Energy Board[7](NEB) and the Canadian Nuclear Safety Commission[8] (CNSC);
- Two offshore petroleum boards: the Canada-Newfoundland and Labrador Offshore Petroleum Board[9] (CNLOPB) and the Canada-Nova Scotia Offshore Petroleum Board[10] (CNSOPB);
- Sustainable Development Technology Canada[11] (SDTC), the Energy Supplies Allocation Board[12] (ESAB), and the Northern Pipeline Agency[13] (NPA).

To deliver on its responsibilities, NRCan relies on a number of tools. It uses science and technology (S&T) to help address priorities and plan for the future. It develops policies, programs, and regulations that help create a sustainable resource advantage, supporting strong, competitive natural resource sectors that are environmentally and socially responsible. And it uses partnerships and international collaboration to help drive progress on natural resource issues important to Canadians.

Strategic Outcomes and Program Activity Architecture

As outlined in its 2011-12 Program Activity Architecture (PAA), NRCan managed its program delivery through three Strategic Outcomes and seven Program Activities designed to achieve expected results, support Government of Canada priorities, and deliver benefits to Canadians.

1- Economic Competitiveness
Natural resource sectors are internationally competitive economically productive, and contribute to the social well-being of Canadians

1.1 Economic Opportunities for Natural Resources

- 1.1.1 Minerals and Metals Markets, Innovation, and Investment
  - 1.1.1.1 Mining Scientific Research and Innovations
  - 1.1.1.2 Socio-economic Minerals and Metals Research and Knowledge, for Investments and Competitiveness and Access to Global Markets
- 1.1.2 Forest Product Market Access and Development
  - 1.1.2.1 Market Opportunities Expansion
  - 1.1.2.2 Leadership for Environmental Advantage in Forestry (LEAF) Initiative
- 1.1.3 Forest Product Innovation
  - 1.1.3.1 Forest Sector Innovation and Investment Promotion
  - 1.1.3.2 Investments in Forest Industry Transformation (IFIT)
- 1.1.4 Institutional Alignment of Forest Research and Development for Effectiveness
- 1.1.5 Forest-based Community Partnerships
- 1.1.6 Energy and Mineral Exploration
  - 1.1.6.1 Targeted Geoscience Initiative 4 (TGI4)
  - 1.1.6.2 Geo-mapping for Energy and Minerals (GEM) Initiative
  - 1.1.6.3 New Energy Supply
- 1.1.7 Domestic and International Energy Policy
- 1.1.8 Statutory Program – Atlantic Offshore

1.2 Natural Resource-based Communities

2- Environmental Responsibility
Canada is a world-leader on environmental responsibility in the development and use of natural resources

2.1 Clean Energy

- 2.1.1 Materials for Energy
  - 2.1.1.1 Innovative Materials and Processing Technologies
  - 2.1.1.2 Pipeline Use and Development
- 2.1.2 Renewable Energy Deployment
- 2.1.3 Clean Energy Science and Technology
- 2.1.4 Energy Efficiency and Alternative Transportation Fuels
  - 2.1.4.1 Equipment
  - 2.1.4.2 Housing
  - 2.1.4.3 Buildings
  - 2.1.4.4 Industry
  - 2.1.4.5 Transportation
  - 2.1.4.6 Alternative Transportation Fuels
- 2.1.5 Pulp and Paper Green Transformation

2.2 Ecosystem Risk Management

- 2.2.1 Green Mining Initiative
- 2.2.2 Forest Ecosystem Science and Application
- 2.2.3 Environmental Geoscience
  - 2.2.3.1 Environmental Stewardship
  - 2.2.3.2 Groundwater Geoscience
- 2.2.4 Radioactive Waste Management
  - 2.2.4.1 Historic Wastes
  - 2.2.4.2 Nuclear Legacy Liabilities
  - 2.2.4.3 Gunnar and Lorado

3- Safety, Security, and Stewardship
Natural resource knowledge, landmass knowledge and management systems strengthen the safety and security of Canadians and the stewardship of Canada's natural resources and lands

3.1 Adapting to a Changing Climate and Hazard Risk Management

- 3.1.1 Mining, Infrastructure and Explosives Safety
- 3.1.2 Forest Disturbances Science and Application
- 3.1.3 Climate Change Geoscience and Adaptation
  - 3.1.3.1 Climate Change Science
  - 3.1.3.2 Climate Impact and Adaptation
- 3.1.4 Public Safety Geoscience

3.2 Natural Resource and Landmass Knowledge and Systems

- 3.2.1 Essential Geographic Information and Support
  - 3.2.1.1 Canada's Legal Boundaries
  - 3.2.1.2 Canada's Geographic Foundation
  - 3.2.1.3 Earth Observation
  - 3.2.1.4 United Nations Convention on the Law of the Sea
  - 3.2.1.5 GeoConnections
  - 3.2.1.6 Polar Continental Shelf Program
- 3.2.2 Major Projects Management Office Initiative

3.3 Geomatics Canada Revolving Fund

4.1 Internal Services

NRCan's activities also contribute to the Federal Sustainable Development Strategy (FSDS), by the legend below.*

Following the publication of NRCan's 2011-12 Report on Plans and Priorities[14], NRCan's 2011-12 Program Activity Architecture was revised. Sub-sub-activities that better reflect the scope of its programs were created. This first review led to more substantial changes to its PAA for 2012-13. In addition, key performance indicators (for both the strategic outcome and program activity levels) were updated to better measure and report on results of the NRCan's programs. Any changes to performance indicators have been identified by a footnote in this report.

* For further details please consult the section on NRCan's "Contributions to the Federal Sustainable Development Strategy" on page 19.

Organizational Priorities

NRCan's 2011-12 Report on Plans and Priorities[15] identified six (6) priorities seen as critical to meeting the Department's Strategic Outcomes and supporting the Government of Canada's priorities. Together, these priorities have guided the Department's policy direction, science and technology initiatives, and program development and delivery. NRCan also successfully delivered on the Government of Canada's Economic Action Plan[16].

The success in delivering each priority is determined by assessing achievements against plans and commitments presented in the 2011-12 Report on Plans and Priorities.

Improving the Performance of the Regulatory System for Project Reviews	Previously Committed Priority	PAA Linkages: Strategic Outcome 3

Major resource projects are an important driver of long-term economic growth and job creation for Canada. A federal review process for major resource projects that is timely, predictable, transparent and accountable is critical to the resource sectors' ability to secure investments for resource development, while maintaining strong environmental protection for Canada. All commitments that support this priority have been completed.

Key achievements for this priority in 2011-12

- Through the *Major Projects Management Office*[17] advanced the development of a suite of legislative, regulatory and policy measures aimed at delivering predictable and timely project reviews, reduced duplication, strengthened environmental protection and enhanced Aboriginal consultations for major project reviews. These measures are a key part of the Government's plan for Responsible Resource Development[18], announced in Budget 2012, and modernization of Canada's regulatory system.
- Provided overall management of the federal regulatory review process for 74 major resource projects, which represented approximately $185 billion of potential new investment in Canada. This included several high-profile projects such as the Northern Gateway Pipeline[19], New Prosperity Gold-Copper Mine[20], Pierre River Oil Sands Mine[21], and Lower Churchill Hydroelectric Generation[22].
- Developed project agreements (PAs) for all MPMO projects undergoing a federal regulatory review to ensure timely, integrated and well-coordinated environmental assessments and regulatory decision-making, including standards related to Aboriginal consultation responsibilities. Project agreement timelines were reduced by 50%, to 23 weeks, compared to 2008-09.
- Maintained robust tracking, monitoring, reporting and issue resolution mechanisms on MPMO projects to ensure target timelines and service standards were maintained, which resulted in exceeding the service standard of completing 80% of reviews within 8 weeks of their target timelines. Overall, project reviews have been reduced, on average, from 4 years to 22 months.
- Worked collaboratively with Aboriginal Affairs and Northern Development Canada, to support the development of a suite of policy proposals designed to improve northern

regulatory regimes and align policy approaches both North and South of the 60th parallel.

- Completed a horizontal evaluation[23] of the Major Projects Management Office Initiative with partner departments and agencies in March 2012. The extensive evaluation found that there was a continued need for the central coordination function performed by the MPMO. The 8 recommendations from the process will be addressed by all implicated departments based on the developed action plan.

Enabling Competitive Resource Sectors	Previously Committed Priority	PAA Linkages: Strategic Outcomes 1, 2, and 3

The current and future competitiveness of Canada's natural resource sectors is dependent on their ability to access markets, increase investments and develop innovative products and processes. Competitive sectors mean jobs and growth in Canada. All commitments that support this priority have been completed.

Several forest-related initiatives received funding in Budget 2011. These initiatives (i.e., Transformative Technologies Program[24] (TTP), the Value to Wood Program[25] (VWP), the Canada Wood Export Program[26] (CWEP), and the North American Wood First Initiative[27] (NAWFI)) encourage a competitive forest sector in Canada by supporting forest product innovation to transition away from volume-based commodities towards a more diversified, higher-value product mix as well as encourage market diversification. Work also included the promotion of Canada's leadership in sustainable forest management in both international and domestic markets.*

Commitments related to earth sciences and minerals and metals were also met in 2011-12. These included the signing of collaboration agreements with academia and industry as part of the Targeted Geoscience Initiative 4[28] (TGI-4) and the completion and publishing of a number of reports and web products, including through the Green Mining Initiative[29].

Key achievements for this priority in 2011-12

- Contributed in 2011 to a 73.9% increase in wood exports to China (valued at $1.45 billion) and a 39.9% increase in exports to Korea (valued at $202 million) through the Canada Wood Export Program.
- Influenced the choice of wood in more than 350 non-residential building projects through the North American Wood First Initiative. This represented $130 million in wood sales for Canada's wood products sector.
- Provided more than 20 science-based information products, through the Leadership for Environmental Advantage in Forestry Initiative, to forest sector stakeholders (e.g., Canadian wood product producers and related industry associations) that address key environmental reputation and market acceptance issues both domestically and

* Budget 2012 provided further support for the forest sector under two initiatives: (1) Expanding Market Opportunities Program, which combined the Canada Wood Export and the North American Wood First programs and activities previously delivered under the Leadership for Environmental Advantage in Forestry; and (2) Forest Innovation Program, which combined support for transformative technologies previously delivered through the Promoting Forest Innovation and Investment Program and the Value to Wood Program.

internationally.

- Signed 8 collaborative agreements with academia and industry partners, as part of the Targeted Geoscience Initiative 4, which generated new geoscience knowledge in support of mineral exploration.
- Delivered more than 50 presentations on geophysical, geochemical and geological results based on TGI-4 results at provincial and territorial open houses and at international conferences (e.g., the Cordilleran Roundup in Vancouver and Prospectors and Developers Convention in Toronto). These presentations highlighted new ore system knowledge and tools developed by TGI-4.
- Completed and published a report entitled *Taxation of Mineral Income 2012 – How Canada Compares*[30], which was tabled at the Energy and Mines Ministers Conference 2011 and uploaded to the NRCan website in June. NRCan also published a series of timely and topical web products including *Canada's Positive Investment Climate for Mineral Capital*[31] (October 2011), The *Geographic Distribution of Canada's Mining Assets*[32] (January 2012), and *Canadian Mineral Exploration and Deposit Appraisal*[33] (February 2012) bulletins, effectively replacing the *Overview of Trends in Canadian Mineral Exploration* publication.
- Advanced green mining innovation in areas ranging from deep mining risk reduction to innovative technologies for mine worker safety. Through the Green Mining Initiative, 123 R&D publications on environmental technologies, including technical reports, cost recovery reports, presentations and journal publications were published; 20 projects were completed with industry and government stakeholders on green mining; and 16 projects were completed on ground control, safe mining or innovative projects.

Advancing Clean Energy	Previously Committed Priority	PAA Linkages: Strategic Outcomes 1 and 2

Energy is a significant segment of the economy and Canada's leading export. NRCan supports a clean energy transition by delivering programs that encourage the adoption of energy-efficient and renewable and alternative energy products and processes by consumers and industries as well as the development of new clean energy technologies. NRCan's clean energy programming (ecoENERGY[34] *programs) was renewed in Budget 2011.*

Key achievements for this priority in 2011-12

- Improved energy efficiency in Canada, through the renewed ecoENERGY Efficiency[35] and ecoENERGY for Retrofit – Homes[36] programs, which resulted in energy savings in 2011-12 of 5 Petajoules and more than 4 Petajoules respectively.
- Established and maintained a number of partnerships with industry and provincial stakeholders through contracts and contribution agreements to cost-share clean-energy technology projects. This included:
  - Co-funding five teams through the Equilibrium Communities Initiative[37] with Canada Mortgage and Housing Corporation to improve community-scale designs and planning, through reductions in energy demand, the use of waste heat and water reductions.

- Collaborating with the University of Waterloo and leading industrial partners (Cosma and Meridian) to design, build and test a lightweight structure for vehicles to promote energy fuel efficiency and test safety.
- Developing a biomass gasification-based burner that meets the majority of specified industrial process requirements. The next phase will focus on detailed feasibility analysis and testing with two Canadian iron ore company partners.
- Collaborating with other government departments and international partners to develop materials for the next generation nuclear reactor systems (GEN IV). This led to the development of new material for cleaner high-temperature energy systems.
- Completing, as part of the contribution agreement with TransAlta Corporation, Front End Engineering and Design (FEED) studies, a proposed integrated carbon capture and storage project in the area of coal fired electricity. The results of the FEED studies add to the knowledge base for regulatory development and technology application as it pertains to carbon capture and storage in the coal-fired electricity sector.

- Monitored current and new projects related to clean energy science and technology, as well as geoscience, and ensuring results were achieved, including through:
  - Signing a contribution agreement with SaskPower to reduce the cost and increase the efficiency of carbon capture and storage for applications in coal-fired electricity.
  - Making significant progress toward completion of the Best Practices Manual under the International Energy Agency GHG Weyburn-Midale CO_2 Monitoring and Storage Project. Once complete, it will provide practical protocols for the design, implementation, monitoring, and verification of CO_2 geological storage projects as well as effective public consultation and outreach processes.
  - Publishing a report with industry and academia titled *Geothermal Energy Resource Potential of Canada*[38] on the potential of geothermal energy.
  - Developing the Marine Renewable Energy Technology Roadmap[39], unveiled at the 2011 Ocean Renewable Energy Group annual conference, which has successfully brought together key stakeholders to develop a vision and strategy for Canada's marine renewable energy sector.
- Enabled the Pulp and Paper Green Transformation Program[40] to exceed its targets for renewable energy production and energy efficiency improvements by signing contribution agreements for an additional 21 projects. In total, this program funds 98 projects at 43 mills across Canada and is expected to add nearly 200 MW of capacity to generate renewable electricity and save 8.5 GJ million of energy annually.

Managing Nuclear Issues	Ongoing Priority	PAA Linkages: Strategic Outcomes 1 and 2

Nuclear energy plays a critical role in Canada's energy mix. Managing nuclear issues is based on established policy objectives, involving meeting Canada's energy and environmental needs safely, economically and reliably, reducing costs and risks for taxpayers, while maximizing returns on Canada's investments in nuclear, and positioning Canada's nuclear industry to seize domestic and global opportunities.

Key achievements for this priority in 2011-12

- Continued to implement the restructuring of Atomic Energy of Canada Limited (AECL) to reduce taxpayers' exposure to commercial risks and costs while positioning Canada's nuclear industry to take maximum advantage of domestic and international opportunities. This included:
  - Completing the divestiture of AECL's CANDU Reactor Division in October 2011. Through the sale to Candu Energy Inc., a wholly owned subsidiary of SNC-Lavalin, the Government of Canada delivered on its objectives to achieve the best deal possible for AECL's commercial arm, its employees, the nuclear industry and Canadians.
  - Making progress towards the restructuring of AECL's Nuclear Laboratories.
- Supported the development of non-reactor-based technologies for the production of medical isotopes through the Non-reactor-based Isotope Supply Contribution Program (NISP). More than 30 partnerships were financed through the NISP and the program resulted in alternative technologies moving closer to commercialization.*
- Met 17 milestones for the Nuclear Legacy Liabilities Program[41] (NLLP), two of which were ahead of schedule. Two facilities related to this project were completed, which will improve the management and storage of degraded spent fuel and low-level radioactive waste. Three decommissioned buildings will allow for the shut-down of another facility by March 2014.
- Received $1.28 billion in funding and approvals for the implementation phase for the Port Hope Area Initiative[42] (PHAI). This phase involves the clean-up of historic radioactive wastes through the construction of new waste management facilities and the transfer and transportation of wastes to these facilities. It will be carried out through two projects, the Port Hope Project, for which the first three implementation stages have been approved, and the Port Granby Project, for which implementation has been fully approved and licensed.

* Budget 2012 provided funding to support the development of new technologies for the production of medical isotopes and to help replace reactor-based isotope supplies.

Advancing Sustainable Resource Development in the North	Ongoing Priority	PAA Linkages: Strategic Outcome 1 and 3

The development of Canada's North will allow Canadians to realize the vast potential of this region, ensuring prosperity and job creation for Northern communities and strengthening Canada's sovereignty while creating a sustainable resource future for generations of Canadians.

Key achievements for this priority in 2011-12

- Worked with Aboriginal Affairs and Northern Development Canada and the Canadian Northern Economic Development Agency (CanNor) in support of the Government of Canada's Northern Strategy to develop mineral resource development blueprints (MRDBs). MRDBs are regional action plans, produced through a robust multi-stakeholder dialogue process, that identify how to overcome barriers to development, manage environmental and social risks, and help communities to seize opportunities. This work is supported through a geospatial platform tool and the federal-provincial-territorial Advanced Minerals Projects Inventory (AMPI).
- Conducted high-resolution geophysical surveys to fill knowledge gaps and provide governments, communities and industry with fundamental geoscience required to make strategic investment decisions in new energy and mineral resources in the North through NRCan's Geo-mapping for Energy and Minerals[43] (GEM) program; released 4 geophysical compilations, 27 bedrock geology maps, and geochemical data from 3 areas in Nunavut and 1 in British Columbia. In addition, 6 airborne surveys were conducted.
- Met annual obligations for land claim surveys, including the survey of 97 kilometres of boundary for the Tlicho Land Claim and 427 kilometres of boundaries for 14 parcels pursuant to the Yukon Land Claims Agreement.
- Worked towards meeting NRCan's December 2013 deadline for the United Nations Convention on the Law of the Sea (UNCLOS) program. The coordinates in the Atlantic are being reviewed and those in the Arctic are in progress.
- Completed topographic mapping of Canada at the 1:50,000 scale through compiling 520 new maps and 92 revisited maps covering parts of Northwest Territories and Nunavut.
- Partnered with the Northern Projects Management Office, through MPMO, to improve the consistency of project management approaches both North and South of 60.

Integrated Management	Ongoing Priority	PAA Linkages: Program Activity 4.1

Timely and cost-effective internal services are critical to support the performance of the overall organization.

Key achievements for this priority in 2011-12

- Implemented a new governance structure with clear accountabilities to support thorough planning and reporting. As well, NRCan implemented a Science and Technology (S&T) Board, which includes external advisors, to ensure oversight and implementation of the department's S&T Strategy.
- Implemented a renewed Program Activity Architecture, Performance Measurement Framework, and Integrated Risk Management Policy Framework supported by the Corporate Risk Profile.
- Supported the improvement of business processes for financial, materiel and project management through implementation of a new financial system (SAP) in partnership with Agriculture and Agri-Food Canada.
- Ensured strategic recruitment efforts in 2011-12, given the current and forecasted budgetary context. Based on rigorous staffing plans, recruitment was targeted to highly specialized professionals to address immediate capacity gaps.
- Implemented a talent management approach for all employees with a focus on strengthening the department's Employee Performance Management Program.
- Developed NRCan's Values and Ethics Code, launched in April 2012 in conjunction with the release of the new federal Values and Ethics Code for the Public Service[44].
- Continued to implement the 2011-14 Official Languages Action Plan through designating sector champions, reminding employees of their rights and responsibilities, and offering tools and resources within NRCan to support compliance with the *Official Languages Act*[45]. The 2012-15 Employment Equity Action Plan was also approved and is being implemented by incorporating an employment equity lens in various HR management approaches and planning processes.
- Implemented a re-engineered Access to Information[46] process to ensure timely and continuous review of active requests and, if necessary, to resolve delays to ensure processing time commitments are met; 97% of NRCan's Access to Information requests were completed on time in 2011-12.
- Contributed to the government's efforts to return to a balanced budget by identifying cost-saving and business transformation measures.

Risk Analysis

As a large and diverse organization, NRCan prepares for and manages a wide range of risks. The Department's approach to risk management is outlined in its Integrated Risk Management Policy Framework, which is based on the recognition that a solid understanding of the risk environment is key to achieving its strategic outcomes. High-level strategic/external and operational risks are presented in NRCan's Corporate Risk Profile, which is monitored and updated regularly. As well, each of NRCan's sectors has in place a Sector Risk Profile that is updated at least annually.

In 2011-12, the successful management of key operational risks led to strong program performance. For example, the divestiture of AECL's CANDU Reactor Division helped mitigate important risks for the Government and represented a significant deliverable for NRCan in achieving its outcomes.

The Department also managed a number of risks to ensure that Canada's natural resource sectors remained competitive. Natural resources are a key economic driver for Canada and play a fundamental role in Canada's economy. While the global economic outlook remained uncertain in 2011-12, Canada was in a strong fiscal position relative to other G8 countries, due in part to the country's large and diverse natural resource endowment and its stable investment climate. Canada's resource endowment and production is far larger than its domestic demand; as a result, economic growth and resource-based prosperity is supported by strong global demand for natural resources.

In 2011-12, NRCan worked to help the natural resource sectors face the uncertain economic outlook abroad (e.g., slower-than-anticipated economic growth in the United States, fragile economic growth in Europe) and to strengthen their resiliency and competitiveness. The Department delivered on the Government's Economic Action Plan[47] (EAP). Specifically, Budget 2011 provided NRCan with new funding authorities:

- Close to $100 million over 2 years for research, development and demonstrations of clean energy and energy efficiency;
- $60 million to support the forest sector's transformation and to help forest companies innovate and tap into new opportunities abroad;
- $86 million over 2 years for clean energy regulatory actions, with a focus on energy efficiency;
- Up to $400 million for the ecoENERGY Retrofit – Homes program to help homeowners make their homes more energy-efficient and reduce the burden of high energy costs; and
- Renewed funding for climate change adaptation and international climate change activities, including the Canada-US Clean Energy Dialogue[48] in collaboration with Environment Canada.

Natural Resources and Canada's Economy

- Canada's natural resources sector – energy, minerals and metals, and forestry accounted for 15% of Canada's total economic activity in 2011.
- In 2011, the natural resources sector directly employed close to 800,000 Canadians across the country.
- Through the purchase of goods and services, the natural resources sector drives in part the GDP of other sectors (e.g. construction, machinery, professional services). This indirect contribution is estimated at approximately 4% of nominal GDP and about 800,000 jobs in other sectors of the economy in 2011.

While these reaffirm NRCan's role in delivering on the Government's agenda, the Department has had to manage risks associated with the diligent and timely implementation of the new and renewed programs funded in 2011. The timing of the launch of some key programs affected, in some cases, the pace at which projects involving partnerships could be implemented. For instance some joint research, development, and demonstration projects were delayed. NRCan managed these program-related risks by monitoring program updates and spending profiles and ensuring that the performance targets for its programs would be met over the longer term lifespan of programs. Quarterly financial and non-financial reviews served to inform senior management of changes and to facilitate re-allocation decisions when warranted.

NRCan continued to manage capacity-related risks. The Department manages several high-profile programs that have a limited lifespan, including large grants and contributions programs. Furthermore, as a science-based department, NRCan manages significant capital assets and highly qualified personnel in an environment where objectives may be achieved on a long time span, but where funding is time-limited and can fluctuate. While this ensures that NRCan's programs are reviewed on a regular basis and that any new programs are aligned to the Government's priorities, managing in this context brings about some risks related to workforce and capacity management.

To respond to this, NRCan took several measures to ensure that its resources were allocated where most needed. A full review of corporate risks was completed, and a comprehensive planning process served to align resource to priorities and to establish clear performance targets. A number of workforce and workplace initiatives were also put in place, such as the implementation of a departmental approach to talent management for all employees, including an employee performance management program, and the targeting of recruitment activities towards highly specialized professionals to address immediate capacity gaps.

NRCan took a series of steps to ensure the smooth implementation and deployment of a new financial management system, including the selection of an already-established system through a partnership with Agriculture and Agri-Food Canada, based on a strong project management governance regime and extensive training program. The project received the Award of Excellence for Comptrollership in the Public Sector.

Summary of Performance

Departmental overview

2011–12 Financial Resources ($ millions)			
	Planned Spending	Total Authorities*	Actual Spending*
Program Spending	1,910.2	2,659.1	2,129.4
Statutory Programs - Atlantic Offshore Accords	1,613.9	1,222.7	1,222.7
TOTAL	**3,524.0**	**3,881.9**	**3,352.2**

* Excludes amount deemed appropriated to Shared Services Canada, if applicable.
** Totals in this section may not add up due to rounding.

NRCan's Planned Spending of $3.52 billion was adjusted over the 2011-12 period to $3.88 billion to reflect the increased authorities granted in Budget 2011. This increase included funding for the Clean Energy programs including the ecoENERGY Retrofit – Homes, Transformative Technologies Program, the Value to Wood Program, the Canada Wood Export Program, the North American Wood First Initiative, and the Nuclear Legacy Liabilities Program. The payments to the Newfoundland Offshore Petroleum Resource Revenue Fund were lower than forecasted due to changes in the anticipated crude oil prices for 2011-12.

NRCan's Actual Spending of $3.35 billion resulted in a lapse of $529.7 million, primarily due to a lapse in the Grants and Contributions Vote related to ecoENERGY Retrofit – Homes and ecoENERGY for Biofuels[49] programs. As well, some portions of the Grants and Contributions vote were reprofiled to future years for the Clean Energy Fund[50], Sustainable Development Technology Canada's* Next Generation Biofuels Fund[51] and Investments in Forest Industry Transformation Program[52] (IFIT). There were also various items reprofiled in the Operating Vote.

2011-12 Human Resources (FTEs)		
Planned	Actual	Difference
4389	4571	182

* Sustainable Development Technology Canada (SDTC) is an arm's length organization created by the Government of Canada to demonstrate new technologies to promote sustainable development, including technologies to address issues related to climate change and the quality of air, water and soil.

Performance by Strategic Outcome

Strategic Outcome 1: Natural resource sectors are internationally competitive, economically productive and contribute to the social well-being of Canadians

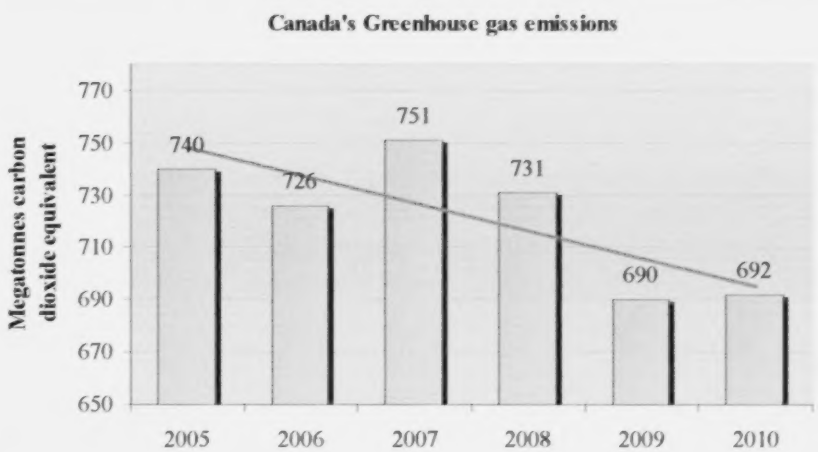
Performance Indicator	Results
Canada's share of resource-based world trade (rank position).	Canada's ranking relative to other countries has improved slightly from the 2006 to 2010 period with respect to wood, wood products and paper (the most recent year for which data are available). With respect to minerals, Canada's ranking relative to other countries has decreased somewhat. Energy exports grew by 19.7% in 2011 from 2010 to $109.5 billion, or 26.1% of total merchandise trade. Mineral and metal processing industries in Canada grew their exports by 20% between 2010 and 2011, accounting for 23% of merchandise exports. Minerals and metals were Canada's leading export to China, making up more than a third of exports to that country. The United States remains Canada's most important trade partner, particularly in energy and forest-related products. China is now Canada's second most important trading partner. The Trade Performance Index (TPI) is defined and reported by the International Trade Centre (ITC) of UNCTAD/WTO. The ITC recently revised its methodology resulting in changes to previously reported rankings.
Target	
Favourable 5-year trend in rank position based on the Trade Performance Index (TPI).	

Program Activity	2010-11 Actual Spending	2011-12 ($ millions)				Alignment to Government of Canada Outcomes[53]
		Main Estimates	Planned Spending	Total Authorities	Actual Spending	
1.1 Economic Opportunities for Natural Resources	2,352.0	1,799.3	1,799.3	1,481.1	1,439.5	Strong Economic Growth
1.2 Natural resource-based communities*	12.7	0	0	0.1	0.02	Strong Economic Growth
Total – Strategic Outcome 1	**2,364.7**	**1,799.3**	**1,799.3**	**1,481.3**	**1,439.5**	

*There are no activities to present in PA 1.2 as per the 2011-12 *Report on Plans and Priorities*. All activities under Strategic Outcome 1 were conducted in PA 1.1.

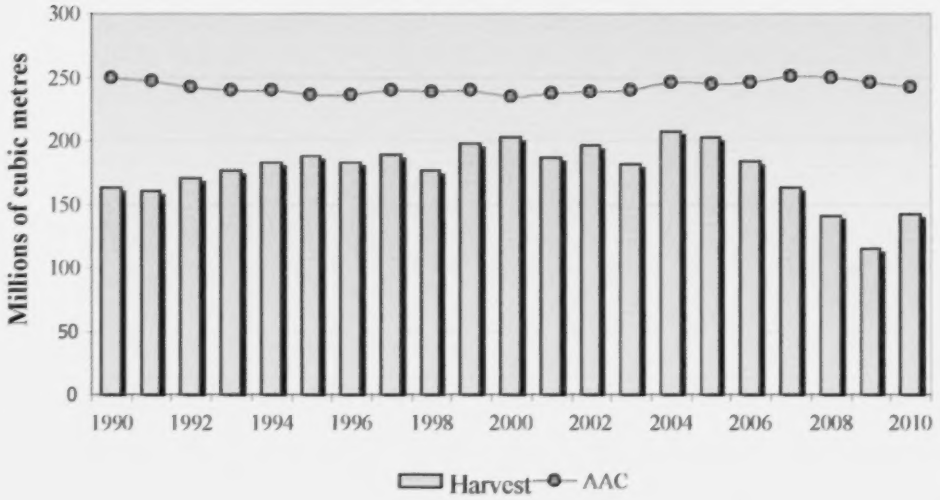
The variance between Planned Spending and Total Authorities is mainly attributable to adjustments of statutory payments under the Newfoundland Offshore Petroleum Resource Revenue Fund.

Strategic Outcome 2: Canada is a world leader on environmental responsibility in the development and use of natural resources

Performance Indicator A*	Results
Change in Canadian greenhouse gas emissions, measured in megatonnes (Mt) of carbon dioxide equivalent.	
Target	
Canada's national target is a 17% reduction from 2005 levels by 2020.	Based on the most recent *National Inventory Report 1990-2010: Greenhouse Gas Sources and Sinks in Canada*[54] Canada's greenhouse gas (GHG) emissions decreased by 6.5% (48 Mt from 2005 to 2010). The largest emissions reductions came from electricity and heat generation, which dropped by 22 Mt, and from manufacturing, which decreased by 17 Mt (driven by the economic downturn), accounting for 35% and 46% of the overall decline, respectively. The decline in emissions from electricity and heat generation is primarily the result of a reduction of electricity and heat generation from coal and oil, as well as improved energy efficiency. Electricity production from renewable sources is increasing, including the contribution from wind, tidal and solar sources. GHG emissions from fossil fuel industries (oil, gas and coal) decreased about 5.5 Mt between 2005 and 2010, primarily due to a 17% decrease in natural gas production and an ongoing trend of declining production of conventional light and heavy crude oil. GHG emissions from the oil sands increased by 16 Mt from 2005 to 2010 due to an increase in production. However, since 1990, the industry has reduced its emissions per barrel of oil produced by 26%.

* The indicator in the Report on Plans and Priorities was *Favourable 5-year trend in petajoules (PJ) saved.* This indicator is now used to measure performance at the Program Activity level in accordance with revisions made to NRCan's Program Activity Architecture and is thus not appropriate to assess performance at the Strategic Outcome level. As such, it has been replaced with *Change in Canadian greenhouse gas emissions*, an indicator at the Strategic Outcome level.

Performance Indicator B*	Results
Annual harvest of timber relative to the level of harvest deemed to be sustainable (Allowable Annual Cut[55] - AAC).	**Annual harvest of timber relative to the level of harvest deemed to be sustainable**
Target	
Stay within the upper limit of the supply line (AAC).	



Canada has 397.3 million hectares of forest and other wooded land, representing 40% of the country's total area[56] and 10% of the global forest cover[57]. It is harvesting timber in a sustainable manner, below the Allowable Annual Cut. Sustainable forest management is a continuous process in which forest management practices and policies evolve in response to scientific advances and public participation. Underpinning sustainable forest management is the objective of meeting society's need for forest products, while at the same time protecting forest health and the environmental and social values derived from Canada's forests.[58]

From 1990 until 2010, timber harvests in Canada were between 86% and 48% of the estimated supply of wood deemed sustainable for harvest. Canada's wood supply has remained relatively stable since 1990 at an average of 242 million cubic metres. The total harvest volume reached a peak of 208 million cubic metres in 2004 and declined to a low of 117 million cubic metres in 2009, the smallest harvest since 1990.

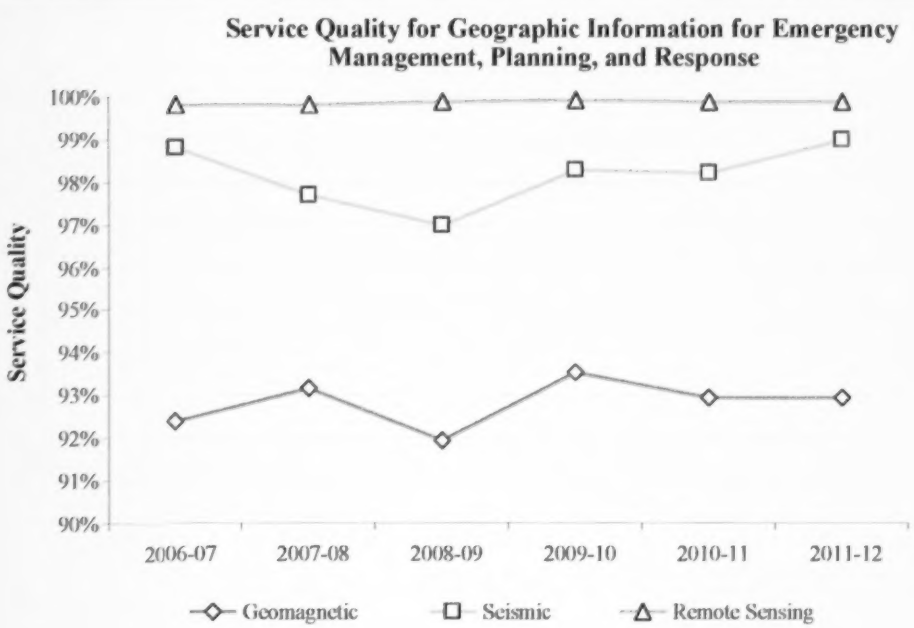
The overall decline since 2004 in harvest is the result of economic factors, such as reduced demand for Canadian lumber because of the slowdown in the United States housing market, and reduced global demand for Canadian pulp and paper products.

*The indicator in the Report on Plans and Priorities was *Favourable long-term trend in number of publications*. This indicator is a measure of output, which is no longer deemed appropriate for performance at the Strategic Outcome level. As such, it has been replaced with a performance indicator at the Strategic Outcome level.

Program Activity	2010-11 Actual Spending	2011-12[59] ($ millions)				Alignment to Government of Canada Outcomes
		Main Estimates	Planned Spending	Total Authorities	Actual Spending	
2.1 Clean Energy	1,329.6	1,327.3	1,327.3	1,745.0	1,323.3	A Clean and Healthy Environment
2.2 Ecosystem Risk Management	198.3	87.0	87.0	226.7	199.1	A Clean and Healthy Environment
Total – Strategic Outcome 2	**1,527.9**	**1,414.3**	**1,414.3**	**1,971.7**	**1,522.4**	

The variance between Planned Spending and Total Authorities is a result of Budget 2011, particularly the ecoENERGY Retrofit – Homes grant program of up to $400 million, and the Nuclear Legacy Liabilities Program. The variance between the Total Authorities and Actual Spending is mainly attributable to a Grants and Contributions Vote lapse related to ecoENERGY Retrofit – Homes and ecoENERGY for Biofuels program. A further Grants and Contribution Vote lapse occurred in the Pulp and Paper Green Transformation Program and other ecoENERGY programs, and some funds related to the Clean Energy Fund and the Sustainable Development Technology Canada Next Generation Biofuels Fund were reprofiled into future years. An Operating Vote lapse was largely attributable to the Port Hope Area Initiative and ecoENERGY programs.

Strategic Outcome 3: Natural resource knowledge, landmass knowledge and management system strengthen the safety and security of Canadians and the stewardship of Canada's natural resources and lands

Performance Indicator*	Results
Contribution to the safety and security of Canadians, and the effectiveness of federal land stewardship and regulatory processes.	
Target	
Greater than 90% of landmass and natural hazard data meet timeliness and accessibility standards.	From 2006-07 to 2011-12, NRCan consistently exceeded its 90% target for timeliness and accessibility of landmass and natural hazard system data, as indicators of the quality of its data and knowledge sharing. The provision of this information helps other levels of government, international government bodies, the private sector and professional organizations to prepare for and mitigate natural disasters and make decisions for the effective management of Canada's natural resources and lands.

* The indicator in the Report on Plans and Priorities was *Favourable long-term trend in number of publications*. This indicator is a measure of output, which is no longer deemed appropriate for performance at the Strategic Outcome level. As such, it has been replaced with a performance indicator at the Strategic Outcome level.

Program Activity	2010-11 Actual Spending	2011-12 ($ millions)				Alignment to Government of Canada Outcomes
		Main Estimates	Planned Spending	Total Authorities	Actual Spending	
3.1 Adapting to a Changing Climate and Hazard Risk Management	60.8	63.6	63.6	55.4	50.8	An Innovative and Knowledge-based Economy
3.2 Natural Resource and Landmass Knowledge and Systems	95.5	84.4	84.4	94.2	87.2	An Innovative and Knowledge-based Economy
3.3 Geomatics Canada Revolving Fund	-0.3	0	0	7.6	0.4	An Innovative and Knowledge-based Economy
Total – Strategic Outcome 3	**156.0**	**148.0**	**148.0**	**157.2**	**138.4**	

Internal Services

Program Activity	2010–11 Actual Spending	2011–12 ($ millions)			
		Main Estimates	Planned Spending	Total Authorities*	Actual Spending*
4.1 Internal Services	308.4	162.5	162.5	271.7	251.7

* Excludes amount deemed appropriated to Shared Services Canada, if applicable.

Contribution to the Federal Sustainable Development Strategy

The Federal Sustainable Development Strategy[60] fulfills the requirements of the *Federal Sustainable Development Act*[61], as passed by Parliament in 2008, to make environmental decision-making more transparent and accountable to Parliament. It outlines the Government of Canada's commitment to improving the transparency of environmental decision-making by articulating its key strategic environmental goals and targets. The FSDS brings together goals, targets, and implementation strategies organized under four themes:

NRCan contributes to progress in all FSDS themes through its program activities as articulated by its Departmental Sustainable Development Strategy[62]. For details on the contribution of program activities to sustainable development, consult the Program Activity Architecture (on Page 3).

NRCan plays a key role in delivering on the Government's Clean Air Agenda[63] by leading on the Clean Energy component as well as contributing to adaptation and international engagement efforts such as the Canada-United States Clean Energy Dialogue[64]. In Budget 2011, the Government renewed its commitment to the Clean Air Agenda, as part of Canada's Economic Action Plan, with a focus on regulatory actions to achieve real emissions reductions while maintaining Canada's economic advantage.

Strategic Environmental Assessments

NRCan also ensures that environmental concerns are considered in its decision-making through Strategic Environmental Assessments (SEAs). During 2011-12, NRCan considered the environmental effects of initiatives subject to the *Cabinet Directive on the Environmental*

Addressing Climate Change and Air Quality

NRCan supports the goals of this theme, which are to reduce greenhouse gas emissions and mitigate the impacts of climate change as well as to minimize the threats to air quality so that the air Canadians breathe is clean and supports healthy ecosystems. NRCan contributes to GHG mitigation and air quality through its Clean Energy programs (PAA 2.1), Ecosystem Risk Management (PAA 2.2), Adapting to a Changing Climate and Hazard Risk Management (PAA 3.1), and Economic Opportunities for Natural Resources (PAA 1.1) through forestry and international activities.

Maintaining Water Quality and Availability

NRCan supports the goal to protect and enhance the quality of water so that it is clean, safe and secure for all Canadians and supports healthy ecosystems through activities under Radioactive Waste Management (PAA 2.2.4). NRCan also supports the goal to enhance information to ensure that Canadians can manage and use water resources in a manner consistent with the sustainability of the resource, through Groundwater Geoscience (PAA 2.2.3.2)

Protecting Nature

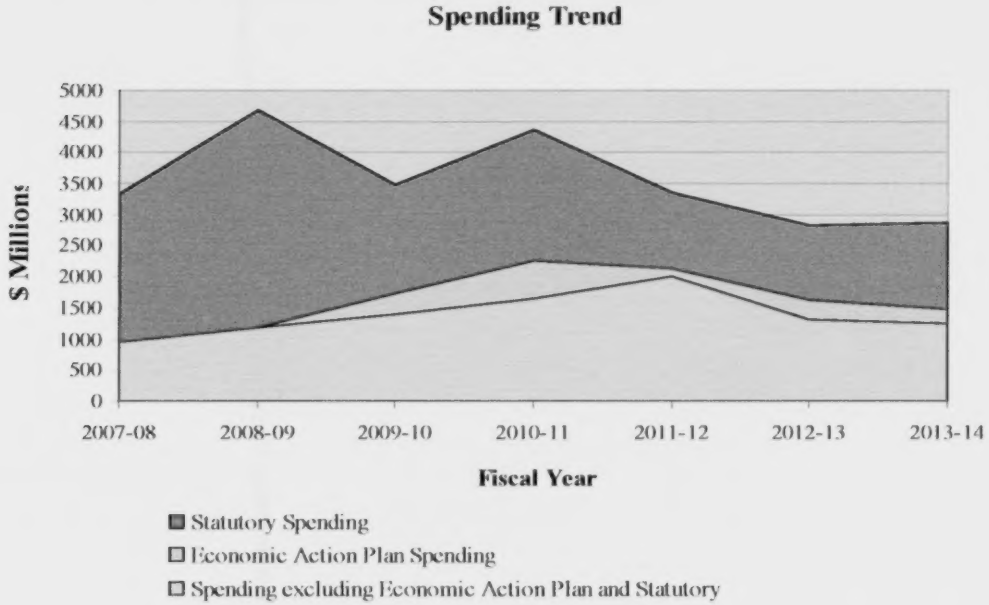
NRCan supports the goal to maintain productive and resilient ecosystems with the capacity to recover and adapt; and protect areas in ways that leave them unimpaired for present and future generations, through programming in Environmental Geoscience (PAA 2.2.3). NRCan also supports the goal that sustainable production and consumption of biological resources are within ecosystem limits through activities in Forest Ecosystem Science and Application (PAA 2.2.2).

Assessment of Policy, Plan and Program Proposals[65]. Through the strategic environmental assessment process[66], 45% of departmental initiatives were found to contribute to the above FSDS Themes, Goals and Targets, with the majority contributing to Themes I and II (the remaining 55% had no impacts or were not applicable to the FSDS).

Further information on the results of detailed strategic environmental assessments is available on the department's website[67]. Additional details on NRCan's activities to support sustainable development and strategic environmental assessments are also available on the department's website[68]. For complete information on the FSDS, visit the Environment Canada website[69].

Expenditure Profile

The graph below compares the Department's seven-year spending trend for expenditures and illustrates changes in the department's overall expenditures for the statutory programs and Canada's Economic Action Plan initiatives.



NRCan's total actual spending for 2011-12 was $3.35 billion. This included $1.22 billion for the statutory programs for the Atlantic Offshore Accords. Through the Accords, NRCan receives royalties for offshore oil and gas production and subsequently pays an equal amount to the provinces of Nova Scotia and Newfoundland and Labrador. As such, statutory payment obligations under the Nova Scotia[70] and Newfoundland and Labrador[71] Offshore Accord Acts are based primarily on oil and gas royalty revenues received and are affected by the price of oil and gas as well as production levels; therefore, the changes in spending for statutory programs are explained by the fluctuation of oil and gas prices and production levels.

NRCan's spending of $2.13 billion, net of statutory programs, is reflective of changes in funding for its programs and activities. For example, NRCan had higher funding levels in fiscal year 2009-10 and 2010-11 as a result of new funding provided under Canada's Economic Action Plan. Differences in NRCan's funding levels over the last three fiscal years are attributable to:

- The delivery of Canada's Economic Action Plan, with a number of programs that have sunset in 2010-11 or whose funding profile declined from fiscal year 2010-11 to 2011-12. Programs that have sunset or had a decline in funding include ecoENERGY Retrofit – Homes, Expanding Market Opportunities, Promoting Forest Innovation and Investment and Modernizing Federal Laboratories. Others have been renewed as part of the Economic Action Plan such as the Clean Energy Fund and Investments in Forest Industry Transformation*.

* Please refer to the end of this section for a list of programs receiving more or less funding from previous years.

- In addition, a number of key NRCan programs that were originally part of the Economic Action Plan were renewed in fiscal year 2011-12 as part of the Government's commitment to clean air and the forest sector. In 2011-12, this included funding of $69.7 million for the ecoENERGY Innovation Initiative[72] (ecoEII) and ecoENERGY Efficiency programs; up to $400 million for a one-year extension of the ecoENERGY Retrofit – Homes program; and $59.4 million for the Forest Innovation and the Expanding Market Opportunities programs.

NRCan's projected spending profile indicates a declining trend in expenditures after fiscal year 2011-12 as a result of sunsetting funding for Canada's Economic Action Plan initiatives as well as other programs, notably the Pulp and Paper Green Transformation Program ($549.8 million), the ecoENERGY Retrofit – Homes program ($400 million), the Forest Innovation and the Expanding Market Opportunities Programs ($59.4 million) and the ecoENERGY Technology Initiative[73] ($48.7 million).

Information on year-to-year variations for the fiscal year period 2012-13 to 2014-15 can be found in the table below, which provides a list of programs that are sunsetting or will have reduced funding as well as programs that will have increased funding.

Fiscal year	Programs sunsetting or with reduced funding	Programs with increased funding
2012-13	Pulp and Paper Green Transformation Program ecoENERGY Retrofit – Homes Program ecoENERGY Technology Initiative Transfer to Shared Services Canada (SSC) related to the Administrative Services Review ecoENERGY for Biofuels program Isotopes Supply Initiative CANMET Materials Technology Laboratory Relocation Program	Nuclear Legacy Liabilities Program Clean Energy Fund ecoENERGY Innovation Initiative Sustainable Development Technology Canada Next Generation Biofuels Fund ecoENERGY Efficiency Program Port Hope Area Initiative Investments in Forest Industry Transformation Program
2013-14	Clean Energy Fund ecoENERGY for Biofuels program Geo-mapping for Energy and Minerals Program Sustainable Development Technology Canada Next Generation Biofuels Fund Port Hope Area Initiative	Nuclear Legacy Liabilities Program Investments in Forest Industry Transformation Program
2014-15	Clean Energy Fund Nuclear Legacy Liabilities Program Port Hope Area Initiative Investments in Forest Industry Transformation Program ecoENERGY for Biofuels Producer Incentive Sustainable Development Technology Canada Next Generation Biofuels Fund	

Estimates by Vote

For information on the department's organizational votes and/or statutory expenditures, please see the Public Accounts of Canada 2012 (Volume II)[74]

Voted and Statutory Items ($ millions)

Voted or Statutory Items	Truncated Vote or Statutory Wording	Actual Spending 2008-09	Actual Spending 2009-10	Actual Spending 2010-11	Main Estimates 2011-12	Actual Spending 2011-12
Vote 1	Operating Expenditures	719.2	869.7	819.6	569.9	755.4
Vote 2	Capital Expenditures		8.9	21.2	13.9	21.4
Vote 5	Grants and Contributions	382.0	780.5	1,346.5	1,267.5	1,285.9
Statutory	Minister of Natural Resources – Salary and Motor Car Allowance	0.1	0.1	0.1	0.1	0.1
Statutory	Contributions to Employee Benefits Plan	58.3	67.1	66.1	58.7	64.1
Statutory	Canada-Nova Scotia Development Fund	--	0.0	0.0	0.0	0.0
Statutory	Infrastructure costs relating to the exploration, development, production or transportation of oil and gas in the offshore area of Nova Scotia	0.6	1.3	0.0	0.0	0.0
Statutory	Canada-Newfoundland and Labrador Offshore Petroleum Board	4.1	4.9	6.3	6.8	3.4
Statutory	Canada-Nova Scotia Offshore Petroleum Board	2.8	2.2	2.2	3.4	2.2
Statutory	Payments to the Nova Scotia Offshore Revenue Account	577.4	109.4	225.2	179.7	157.3
Statutory	Payments to the Newfoundland Offshore Petroleum Resource Revenue Fund	2,351.0	1,180.9	1,227.7	1,424.0	1,059.8
Statutory	Grant to Sustainable Development Technology Canada	19.0	0.0	0.0	0.0	0.0

Voted or Statutory Items	Truncated Vote or Statutory Wording	Actual Spending 2008-09	Actual Spending 2009-10	Actual Spending 2010-11	Main Estimates 2011-12	Actual Spending 2011-12
Statutory	Newfoundland and Labrador Fiscal Equalization Offset Payments	556.7	465.3	641.9	0.0	0.0
Statutory	Grants in Support of Energy Costs Assistance Measures	0.0	0.0	0.0	0.0	0.0
Statutory	Spending of proceeds from the disposal of Crown assets	0.4	0.5	0.5	0.0	0.3
Statutory	Refund of amounts credited to revenues in previous years	0.0	0.0	0.0	0.0	0.0
Statutory	Grant to the University of Calgary, Institute for Sustainable Energy, Environment, and Economy	5.0	0.0	0.0	0.0	0.0
Statutory	Pursuant to section 2146 of the *Jobs and Economic Growth Act*, for the divestiture of Atomic Energy of Canada Limited	0.0	0.0	0.0	0.0	1.7
Statutory	Geomatics Canada Revolving Fund - Operational expenditures - Respendable revenue	0.9	0.5	(0.3)	0.0	0.4
Total Spending		**4,677.5**	**3,491.3**	**4,357.0**	**3,524.0**	**3,352.2**

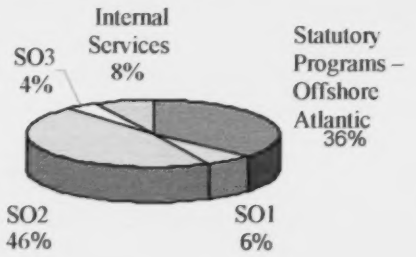
Section II: Analysis of Program Activities by Strategic Outcome

This section provides performance information on the delivery of programs that were critical to the realization of our Strategic Outcomes and priorities in 2011-12. During the reporting period, NRCan monitored and tracked progress through quarterly reviews, which enabled early detection of problem areas and the implementation of corrective actions to deliver expected results in accordance with plans, timelines and budgets.

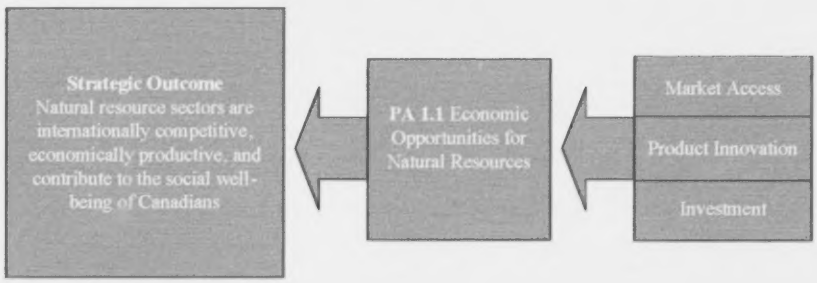
NRCan also updated its performance indicators to support improved performance management and decision-making, and to provide more accurate and balanced performance information to Parliament and Canadians. As a result, performance indicators in this document differ slightly from those published in the corresponding 2011-12 Report on Plans and Priorities[75].

More information about these programs and initiatives, as well as supporting evidence from internal evaluation and audit reports, can be found on our website[76].

Percentage of NRCan spending by Strategic Outcome in 2011-12



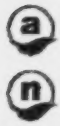
Strategic Outcome 1: Economic Competitiveness


Strategic Outcome
Natural resource sectors are internationally competitive, economically productive, and contribute to the social well-being of Canadians
PA 1.1 Economic Opportunities for Natural Resources
Market Access
Product Innovation
Investment

NRCan works to advance the economic competitiveness of natural resources by:

- Diversifying export markets and reducing reliance on any single market through trade promotion and expansion of the use of traditional products;
- Maximizing productivity and the development of non-traditional products by encouraging natural resource sectors to adopt new technologies and processes and to develop new products; and
- Providing information that supports exploration and promotion of natural resources and developing policies that are conducive to investment.

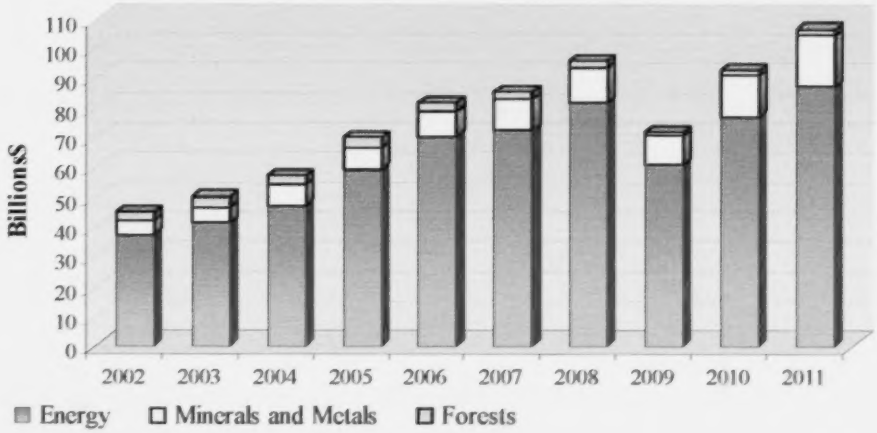
Program Activity 1.1: Economic Opportunities for Natural Resources

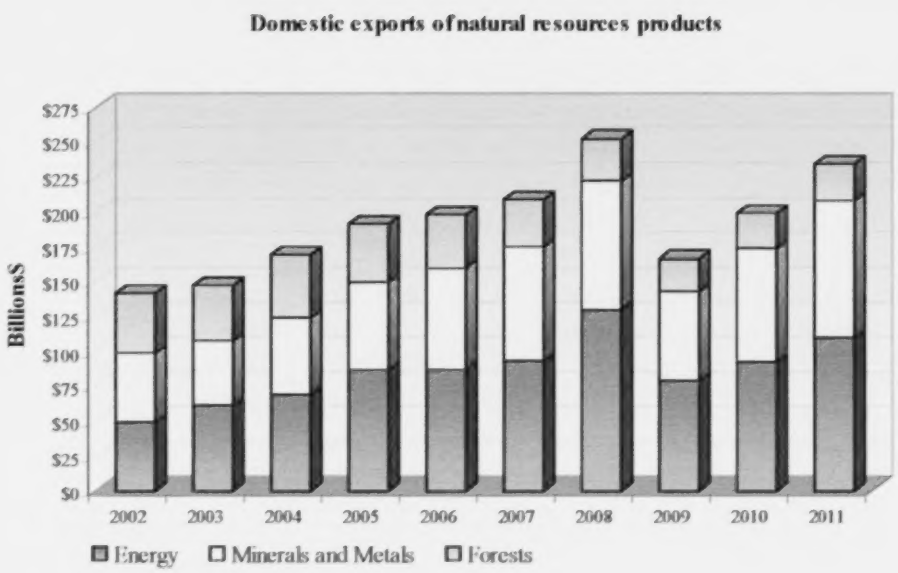


Expected Result: **Competitive national and international markets, stable economic opportunity, and investment in natural resources**

The program activity contains programs designed to promote innovation, investment and the enhancement of the competitiveness of Canada's industries involved in natural resources and related products through the provision of know-how and tools, including base geoscience information, along with trade promotion and market acceptance, at home and abroad. This group of programs also delivers policies, regulations and legislative work to manage federal responsibilities associated with Canada's oil and natural gas supply, protecting critical energy infrastructure, and managing statutory programs for the Atlantic offshore.

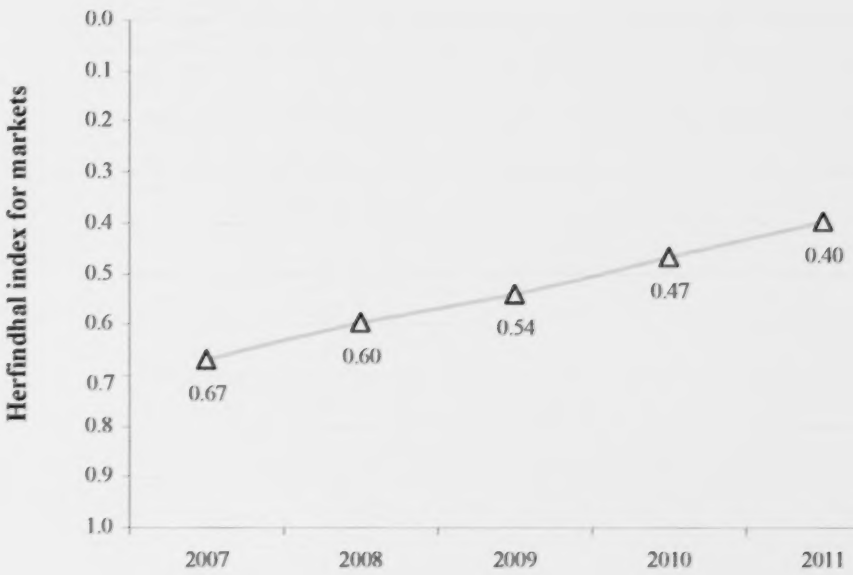
	2011-12 Financial Resources ($millions)			2011-12 Human Resources (FTEs)		
	Planned Spending	Total Authorities	Actual Spending	Planned	Actual	Difference
Program	185.5	258.4	216.8	910	986	76
Statutory Programs – Atlantic Offshore Accords	1,613.9	1,222.7	1,222.7			

Performance Indicator	Results
Capital investments in the resources sector. **Target** Favourable 10-year trend (in billions of dollars).	**New Capital Investment**  The trends in capital investments have remained relatively stable over the past five years. As the global and Canadian economies continue to recover from the global recession, investments in natural resources are increasing (following a decrease in 2009-10), and this upward trend is projected to continue. Investments in new capital are expected to be $125 billion in 2012, which represents a 17% increase from 2011. The largest investment is expected to be in energy, which has rebounded to pre-recession levels. This is followed by investments related to minerals and metals and forests.

Performance Indicator	Results
Domestic exports of natural resource products.	
Target	
Favourable 10-year trend (in billions of dollars).	

Domestic exports of natural resource products peaked in 2008 and then declined following the global economic recession. However, demand for natural resources among developing countries and most notably China has led to a positive trend in exports since 2009, which is expected to continue.

For example, global demand for aluminum, copper, nickel and zinc is increasing and is expected to remain positive. In 2011, minerals and metals were the leading export to China and accounted for roughly a third of all commercial exports. Largely due to demand, energy exports, excluding uranium and coal, grew by 19.7% in 2011 to $109.5 billion. The export of softwood lumber to China reached an all-time high in 2011, and continued growth is expected.

Performance Indicator	Results
Diversity of Canada's wood products export markets (as measured by the Herfindahl index for markets)	
Target	
Favourable 5-year trend.	During the last 5 years, Canada has successfully diversified the export market for wood products, most notably in Asia. For example, wood exports to China and Korea in 2011 were up 73.9% and 39.9% respectively from 2010 levels to $1.45 billion and $202 million. This clear and positive 5-year trend demonstrates Canada's success in diversifying end markets for Canadian wood products away from a single market. The diversity of export markets increases the resiliency of the forest sector and allows it to adapt more easily to changing market conditions. The Herfindahl Index presented here is supported by data from Statistics Canada's *World Trade Atlas*. The closer the value is to 0, the more a country has diversified its exports away from a dependency on one key market. The calculation of the index takes into account the number of countries of destination markets, pro-rated based on the value of the exports.

Performance Summary and Analysis of Program Activity

Natural resources are a key economic driver for Canada and play a fundamental role in Canada's economy. Canada has maintained a strong economic position, due in part to the country's large and diverse natural resource endowment and its stable investment climate. As Canada's resource endowment and production is far larger than its domestic demand; as a result, economic growth and resource-based prosperity is supported by a strong global demand for natural resources. NRCan works to capitalize on this demand for Canada's natural resources, particularly from

emerging economies, by encouraging capital and exploration investments in this sector. As well, with growing global competition, especially in the forest sector, Canada is no longer able to rely only on traditional markets and products to remain competitive and must diversify markets through the expansion of exports and trade. NRCan supports the economic competitiveness of natural resource sectors by:

- Promoting exploration of and investment in our natural resources;
- Developing policies that are conductive to investments and market access; and
- Encouraging product diversification and innovation in the forest sector.

In 2011-12, NRCan programs encouraged natural resource investment and trade in Canada. For example, forest-related programs contributed to market diversification, the expansion of wood product applications in new market segments, and the development of value-added forest products and technologies. As well, the provision of public geoscience knowledge (focusing on the North) is required for investment and development decisions by the private sector. Finally, NRCan also worked with Aboriginal and non-Aboriginal forest-based communities to ensure that they had the expertise and tools to take advantage of emerging economic opportunities.

Key Achievements in 2011-12

Encouraging Investment and Exploration

- Promoted Canada's investment and exploration in Canada's natural resource sector through the provision of information by the Targeted Geoscience Initiative 4 (TGI-4), which provides improved geoscience knowledge on Canada's minerals system including exploration models, and the Geo-mapping for Energy and Minerals (GEM) program, which provides the geoscience knowledge necessary for private sector exploration companies to guide investment decisions. Specific achievements in these areas include:
  - Delivering more than 50 presentations at international and domestic conferences that highlight the new ore system knowledge developed under TGI-4.
  - Conducting consultations and information sessions across Northern communities to better align GEM priorities with the needs of local communities for economic development as well as providing a grant to the Arctic College, which resulted in web-based geoscience education and information.
  - Developing tools that will enhance the effectiveness of exploration for deeply buried gold deposits as well as for exploration of the nickel-copper-platinum group of elements.
  - Releasing new geophysical and new geochemical information to fill identified knowledge gaps about potential investment opportunities in the North.
- Encouraged investments in the minerals and metals sector by:
  - Releasing a report on *Taxation and Mineral Income in 2012 – How Canada Compares* and other web products that raise awareness about opportunities such as *Canada's Positive Investment Climate for Mineral Capital*, *The Geographic Distribution of Canada's Mining Assets*, and *Canadian Mineral Exploration and Deposit Appraisal*.
  - Working with other government departments to develop an approach supporting sustainable northern mining; this included developing a platform for sharing geospatial data and initiating the development of a series of planning tools.

- Ensured that forest-based communities have the knowledge and tools needed to take advantage of emerging economic opportunities by:
  - Implementing the Aboriginal Forestry Initiative[77] (AFI), which supported 16 projects focussed on activities such as undertaking feasibility studies, building capacity, and developing skills for business and job creation. This initiative encourages partnerships among other levels of government and has contributed to four first nations receiving funds to commence planning of local pellet and cogeneration facilities and has supported training of community members to work in the facilities.
  - Producing more than 50 publications, tools and strategies that focus on topics ranging from bio-energy and climate change research to implementation of youth skills development initiatives under the Forest Communities Program[78]. These products help forest-based communities transition to the new economy.

Improving Market Access and Product Diversification

- Helped to bolster market acceptance of Canadian wood products under the Leadership for Environmental Advantage in Forestry Initiative by developing science-based products to highlight Canada's sustainable forest sector practices and address environmental reputation issues related to the purchase of Canadian forest products.
- Promoted Canada as a responsible natural resource supplier in various bilateral and multilateral fora, including two Ministerial missions to Asia, which resulted in an Memorandum of Understanding on Energy Cooperation between China and Canada that will attract capital investment and improve access to Chinese markets for Canada's energy resources, technology, and related services. Substantive work was also conducted to promote Canada's energy interests internationally, including:
  - Strengthening the dialogue on energy between Canada and Norway through a Joint Ministerial Statement on Cooperation in the energy sector that will enhance commercial cooperation by energy companies;
  - Supporting the Canada-Brazil Energy Dialogue to create opportunities for both countries and energy suppliers to exchange experiences and technology;
  - Participating in several international energy fora, including Ministerial meetings at the International Energy Agency and International Energy Forum; and
  - Providing advice and recommendations on energy-related issues with the United States including development, in collaboration with the United States Department of Energy, of an action plan for the second phase of the Clean Energy Dialogue. This includes collaboration, through a working group, on key clean energy and technology areas such as carbon capture and storage (CCS) to advance CCS research, development and demonstration.
- Enabled the competitiveness of the energy and mining sectors by supporting the Government of Canada in securing an agreement with other levels of government on a collaborative approach to energy, and contributing to the development of work plans within the Council of Energy and Mines Ministers.
- Bolstered acceptance of Canadian energy resources by working collaboratively with the Task Force on Energy Security, Prosperity and Sustainability to communicate the contribution that

energy resources from the oil sands make to the economy, energy security, international trade, and environmental responsibility and sustainability.

- Improved the market access and diversification of Canada's wood products through a suite of programs including the Canada Wood Export Program (CWEP), the North American Wood First Initiative (NAWFI), and the Value to Wood Program (VWP). The programs were provided an additional year of funding in Budget 2011 to help the forest industry to diversify and expand markets for its products. Specific achievements included:
  - Helping expand exports to countries such as China and Korea, through the CWEP. It also contributed to the promotion of non-traditional uses of wood products through a memorandum to understanding on Eco-cities with China's Minister of Housing and Urban-Rural Development, which calls for Canada-China cooperation to develop eco-cities technology in a number of areas, including energy-efficient buildings and the use of wood in multi-story buildings.
  - Continuing to increase the use of wood in the non-residential sector in Canada and the United States through the provision of education, promotion and technical advice under NAWFI, which directly influenced the choice of wood in almost 352 non-residential building products, representing $130.3 million of wood product sales.
  - Funding 27 research projects at 5 research organizations across Canada through VWP, which generated new and improved wood products and processes by the secondary wood products manufacturing sector, and provided technical support to close to 160 small- and medium-sized wood manufacturers to enable process and competitive improvements in all their operations.
- Encouraged research and innovation in the forest sector through the Transformative Technologies Program (TTP), administered by FPInnovations, along with the Investments in Forest Industry Transformation (IFIT) program and the Forest Innovation by Research and Education[79] (FIBRE) initiative. These initiatives support research, innovation and the development of highly qualified personnel to allow for the development of diverse and innovative wood products and technologies. Key achievements included:
  - Enabling the commercial-scale production of nanocrystalline cellulose through funding received under the TTP and the Pulp and Paper Green Transformation Program. This high-value bioproduct has a variety of potential uses, including aerospace structures, pharmaceuticals, security papers and cosmetics. Funding was provided to the TTP program in Budget 2011 to further support the development of emerging and breakthrough technologies.
  - Signing contribution agreements for 4 transformative projects, generating $17.7 million in investments in first-in-Canada innovative technologies through the IFIT program. These projects focus on the production of new engineered wood products, bioproducts and bioenergy. These innovative new products and technologies ensure a more diverse, higher-value mix of products and renewable energy in Canada's forest sector.
  - Supporting the development of FIBRE, launched in fall 2011, which builds synergies among eight forest research and development networks in support of the priorities of Canada's forest sector innovation system.

Lessons Learned

Forest Products Market Development Programs

An evaluation[80] of the Forest Products Market Development Programs was completed in 2011, which included the Canada Wood Export Program, the North American Wood First initiative, and the Value to Wood Program. The evaluation confirmed the need for these programs and that they are effectively responding to the needs of Canada's forest sector. These programs received additional funding in Budget 2011 to continue to deliver on their results of expanding markets for wood products. An area highlighted for continued improvement was to ensure more equitable opportunities for wood products industry associations to participate in the Canada Wood Export Program and the North American Wood First Initiative and to provide more flexibility in the funding mechanisms.

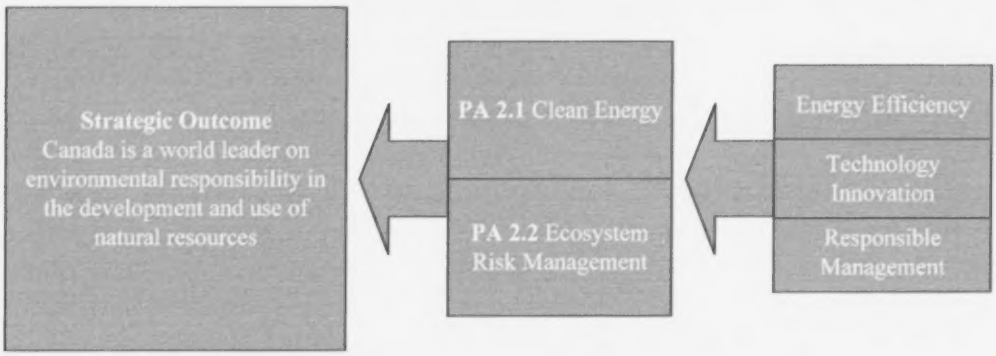
Securing Forest Products Markets: International Influence

In 2011-12, an evaluation[81] was also conducted on Securing Forest Products Markets: International Influence, which included the Leadership for Environmental Advantage in Forestry (LEAF) Initiative, International Forestry Partnerships Program, and the Economic Action Plan demonstration projects. The evaluation found that domestic and international demonstrations were well delivered with partners. In addition, the evaluation recommended that NRCan develop a comprehensive coordinated approach that clearly communicates the role of different stakeholders and integrates market access and development programs. In response, the administrative functions of all market programs were merged, and environmental reputation work was integrated with other market activities.

Links with the Federal Sustainable Development Strategy (FSDS)

NRCan's Economic Competitiveness activities provide support to Theme I (Clean Air) and Theme III (Protecting Nature) of the FSDS through projects on minerals and metals (1.1.1). As well, forest product market development activities that support forest sector innovation (e.g., IFIT) are providing alternatives to non-renewable products and energy sources through the development of new bioproducts, bioenergy and next-generation wood products (1.1.3). Participation in key international fora and international climate change negotiations in order to represent Canada's energy interests (1.1.7) also contributes to Theme I (Clean Air).

Strategic Outcome 2: Environmental Responsibility


Strategic Outcome
Canada is a world leader on environmental responsibility in the development and use of natural resources
PA 2.1 Clean Energy
PA 2.2 Ecosystem Risk Management
Energy Efficiency
Technology Innovation
Responsible Management

NRCan works to ensure that natural resources are developed and used in an environmentally responsible manner by:

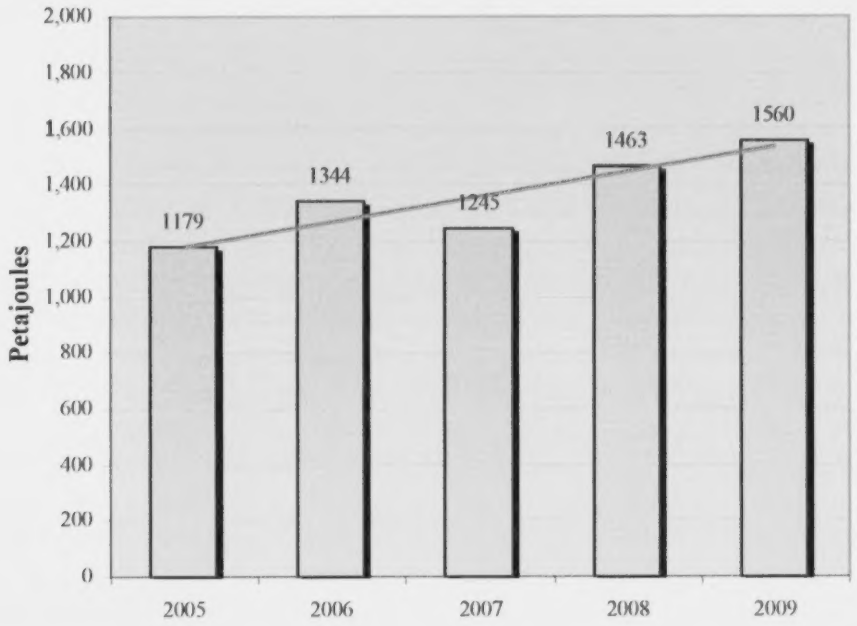
- Encouraging and enabling energy consumers and producers to adopt cleaner and more efficient technologies, products, and practices;
- Encouraging academia, industry and the public sector to research, develop, and demonstrate innovative solutions to environmental challenges; and
- Enabling government departments, regulatory bodies and industry to understand the risks to the environment, assess environmental impacts, and protect Canada's resources.

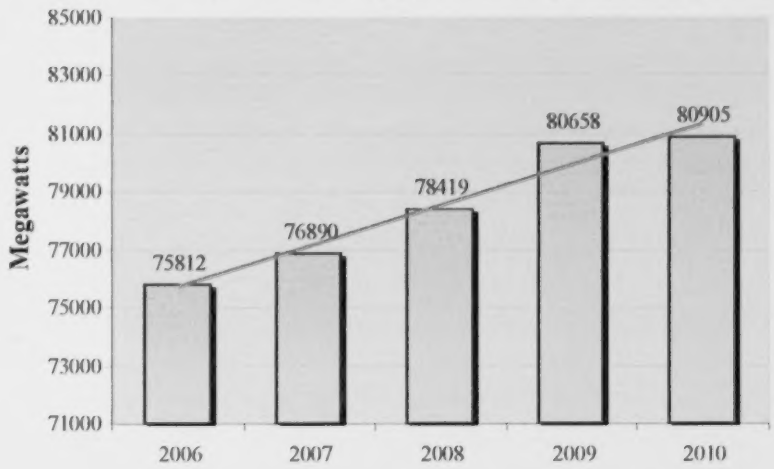
Program Activity 2.1: Clean Energy

Expected Result: **Increased energy efficiency, increased production of low-emission energy, and reduced environmental impacts associated with energy**

The program activity includes the development and delivery of energy science and technology, policies, programs, legislation and regulations to mitigate greenhouse gas emissions and to reduce other environmental impacts associated with energy production and use. One of the major programs is the suite of initiatives on clean energy announced under the banner of ecoENERGY, which is intended to increase production of low-impact renewable energy; encourage and help Canadians in improving their energy use in all of the major end-use sectors; and to accelerate the development and market readiness of technology solutions to reduce environmental impacts associated with the production and use of energy.

2011-12 Financial Resources ($ millions)			2011-12 Human Resources (FTEs)		
Planned Spending	Total Authorities	Actual Spending	Planned	Actual	Difference
1,327.3	1,745.0	1,323.3	796	906	110

Performance Indicator	Results
Canada's total annual energy savings due to efficiency (difference between energy use without energy efficiency improvements and energy use with energy efficiency improvements).	**Canada's Energy Savings Due to Efficiency** 
Target	From 2005 to 2009 (the most recent year for which data are available), energy savings due to energy efficiency in Canada increased by 381 petajoules (PJ). This represents a significant increase in energy savings over that time period. Since 2005, energy efficiency improvements were made in the residential, commercial/institutional and transportation sectors with a combined 23% gain in energy savings. Improvements in industrial sector were even more significant, with a 51% gain in energy savings. A smoothing of the energy efficiency trend can be seen compared to last year's report. This is a result of a change in the factorization process that identifies the improvements in energy efficiency that occurred in the Canadian economy. More details on this change as well as information on trends in energy use and energy efficiency in the residential, commercial/institutional, industrial, and transportation sectors can be found in the report Energy Efficiency Trends in Canada 1990-2009[82] and the Energy Efficiency Trends Analysis Tables[83].
Favourable 5-year trend in energy saved (in petajoules [PJ]).	

Performance Indicator	Results
Renewable electricity generation capacity. **Target** Favourable 5-year trend in electricity generation capacity against a baseline year of 2005 (in megawatts [MW]).	**Renewable electricity generation capacity in Megawatts**  Canada is the third largest producer of hydroelectricity in the world and has significant potential to produce renewable energy from other sources such as biomass, wind, solar, geothermal and even tidal. In 2010 (the most recent year for which data are available), Canada's renewable electricity generating capacity was more than 80,905 MW, which is a 6.7% (5,093 MW) increase since 2006. The distribution of renewable electricity generating sources differs across Canada based on regional renewal energy sources. As a result, some provinces having substantial hydro-electric capacity while others are focussed on harnessing the potential of biomass, solar, wind and tidal energy.

Performance Summary and Analysis of Program Activity

As the world transitions to a lower-carbon economy, clean energy will play an increasingly important role in this transition. NRCan supports this transition by encouraging and enabling energy consumers and producers to adopt cleaner and more efficient technologies, products, and practices. Through its programs, it encourages improved energy efficiency, increased production and use of renewable and alternative energy, and the development of clean energy technologies.

In 2011-12, NRCan worked in collaboration with industry, academia, other government departments and regulatory bodies to reduce the environmental impact associated with energy production and use. In addition, the ecoENERGY initiatives were renewed in Budget 2011 including activities on energy efficiency and ecoENERGY Retrofit – Homes as well as clean energy research, development and demonstration.

Key Achievements in 2011-12

- Improved energy efficiency in Canada, through the renewed ecoENERGY Efficiency program, which achieved an energy savings of more than 5 petajoules in 2011-12. Key accomplishments for the ecoENERGY Efficiency program included:
  - Training more than 218,300 individuals in energy efficiency products and practices (i.e., 210,000 new drivers, 4,300 fleet drivers, 1,250 building sector professionals, 1,950 industry sector professionals, and 800 housing sector professionals).
  - Publishing the National Energy Code for Buildings 2011, for adoption/adaptation by provinces and territories, in November 2011. The code establishes an overall 25% improvement in energy efficiency in comparison to the previous code and places Canada on a comparable footing with other countries that lead in energy-efficient building construction.
  - The ecoENERGY Retrofit – Homes program reached its 2011-12 target of 250,000 registrants, and provided incentives to eligible homeowners to make their homes more energy efficient.
- Reached the ecoENERGY Retrofit – Homes program target of 250,000 registrants, and provided incentives to eligible homeowners to make their homes more energy efficient, achieving an energy savings of more than 4 petajoules per year.
- Encouraged the production of renewable energy through ecoENERGY for Renewable Power[84], ecoENERGY for Biofuels, and the Pulp and Paper Green Transformation Program. Specific achievements in these areas included:
  - ecoENERGY for Renewable Power, which encourages the production of clean electricity from renewable sources, is fully subscribed and has exceeded its target of 4,000 MW of renewable electricity production capacity. It has signed 104 contribution agreements, representing 4,458 MW of renewable power production capacity.
  - ecoENERGY for Biofuels, which provides operating incentives to producers of renewable alternatives to diesel (i.e., biodiesel) and gasoline (i.e., ethanol), has signed 30 contribution agreements, which represent almost all of the targeted biodiesel capacity of 500 million litres but falls just short of the targeted ethanol capacity of 2 billion litres. Challenges remain, however, because biodiesel production by producers is not coming on-line as expected due to several factors such as economic conditions and the preferences of fuel providers.
  - The Pulp and Paper Green Transformation Program signed agreements for 21 projects in 2011-12, resulting in the program surpassing its targets for renewable energy production and energy efficiency improvements. As a whole, this program has provided funding for 98 projects in 38 communities across Canada, with program contributions totalling $950 million. The program is expected to add nearly 200 MW of capacity to generate renewable electricity and save 8.5 million GJ of energy annually.
- Established, through the ecoENERGY for Alternative Fuels[85] program, two new committees that are actively working on developing and updating the codes and standards for liquid and compressed natural gas vehicles and refuelling stations.

- Increased innovation through Clean Energy Science and Technology and Materials for Energy activities, which have advanced the development of knowledge and technologies to enable a transition to a clean energy economy and to reduce greenhouse gas emissions. Some key highlights in 2011-12 included:
  - Launching the ecoENERGY Innovation Initiative, which builds on the past success of the Clean Energy Fund and the ecoENERGY Technology Initiative. A successful Request for Project Proposals (RFPs) process with a newly established expert review committee resulted in 111 projects from 159 proposals being selected for research and development (R&D) by federal departments in the first year of the program. An additional 139 future projects were selected from 460 proposals for federal R&D and external R&D and demonstration.
  - Furthering research, development and demonstration on carbon capture and storage (CCS) with industry partners and expanding geoscience through contribution agreements with:
    - SaskPower for a pilot-scale demonstration project at the Shand Power plant to reduce the cost and increase the efficiency of CCS in coal-fired electricity;
    - The Petroleum Technology Research Centre for the Aquistore project, which will demonstrate safe storage of carbon dioxide in a deep saline formation; and
    - The development of the North American Carbon Storage Atlas[86] that identifies all major sources of carbon dioxide emissions and potential geological reservoirs for storage and estimated capacity in Canada, Mexico, and the United States.
  - Developing new materials to support energy improvements in the next generation of nuclear reactors (GEN IV) and for the transportation industry in collaboration with partners. New high-temperature materials (e.g., ceramic based insulators and coatings) were developed for GEN IV, and can be used in other energy applications. New transportation materials were developed that support energy efficiency improvements such as cast aluminum alloys for improved engine design, which are ready to transfer to commercial applications as well as magnesium-based technologies for lightweight structural materials developed through a collaborative Canada-US-China project.
  - Working in collaboration with Canada Mortgage and Housing Corporation on the Equilibrium Communities Initiative to focus research on improving designs and planning by developers in key theme areas (energy, water, land use, transportation, and natural environment), which resulted in forecasted reductions in energy and water demand and improvements in the use of waste heat.

Links with the Federal Sustainable Development Strategy (FSDS)

The Clean Energy program activities provide significant support to Theme I (Clean Air) of the FSDS, specifically to Goal 1.1 to reduce greenhouse gas emissions, and contribute indirectly to Goal 1.2 to improve air quality. Key highlights of the contribution to these goals include:

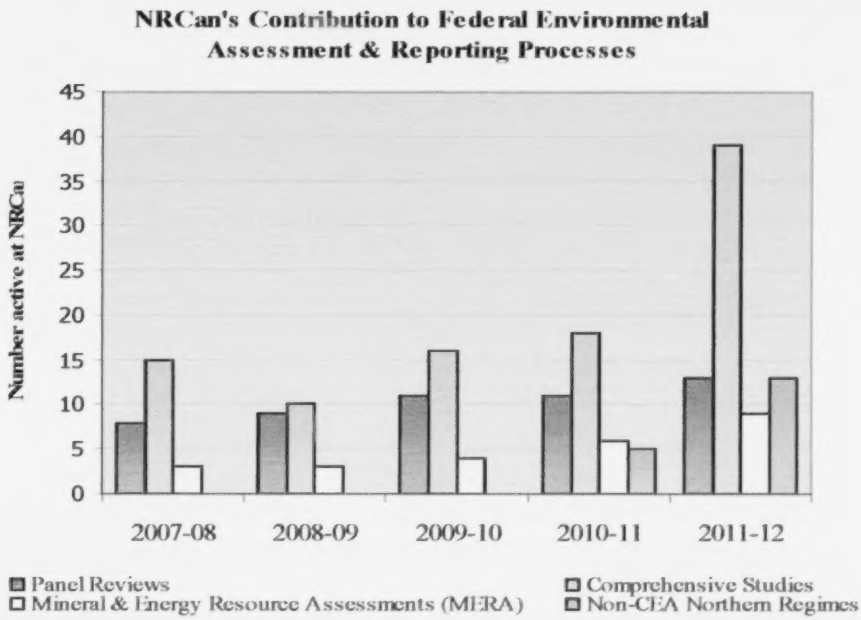
- Improving energy efficiency in Canada through the provision of training, information, and tools on energy efficient products and practices in several target sectors (housing, buildings, equipment, industry, and transportation) as well as the enhancement of energy efficiency regulations. In addition, supporting domestic production capacity of renewable fuels in support of Environment Canada's Renewable Fuels Regulations. (2.1.4)
- Encouraging the development of a clean electricity system under the ecoENERGY for Renewable Power program, which is projected to result in the reduction of carbon dioxide emissions of between 6.0 and 6.7 Mt. (2.1.2) and enabling Canada's pulp and paper industry to reduce its GHG emissions by more than 10% from 2009 levels by funding projects that increased mills' capacity to generate renewable electricity and their ability to utilize biomass as an energy source, thereby reducing their overall energy consumption. (2.1.5)
- Taking concrete actions to reduce GHG emissions and air pollutants by investing in clean energy RD and demonstration (i.e., CCS, Equilibrium Communities Initiative). (2.1.3) As well as developing new high-temperature materials that can be used in fossil power and petrochemical systems to improve thermal efficiency and lower emissions, and new lightweight and structural materials for improved engine design and automotive applications with the goal of improving the efficiency of engine combustion as well as fuel efficiency. (2.1.1)

Program Activity 2.2: Ecosystem Risk Management

Expected Result: Canada understands and mitigates risks to natural resource ecosystems and human health

The program activity includes programs that help to understand the risks to our environment and the protection of critical resources such as groundwater. A major initiative is the National Forest Inventory[87], which is designed to provide information to provinces, territories, other collaborators and the public on the state of Canada's forests and to demonstrate how forest attributes are changing over time.

2011-12 Financial Resources ($ millions)			2011-12 Human Resources (FTEs)		
Planned Spending	Total Authorities	Actual Spending	Planned	Actual	Difference
87.0	226.7	199.1	419	383	(36)

Performance Indicator	Results
NRCan's contribution to federal environmental assessments, and forest, mineral and energy resource assessments for proposed protected areas on federal lands and waters, and related reporting processes[88].	
Target	
Fulfilling on-demand requirements.	NRCan continued to be a major contributor to federal environmental assessment and reporting processes – including both Panel Reviews and Comprehensive Assessments – as required under the *Canadian Environmental Assessment Act*[89]. In 2011-12, NRCan delivered 70 complete environmental assessment project reviews of which 98% were delivered on schedule. In a similar fashion, NRCan contributed its expertise, such as economic and mineral development analysis when considering lands for exclusion as having potential strategic minerals as part of the Mineral and Energy Resource Assessments (MERA) process for the establishment of reserves, national parks, and other protected areas. This included delivery of all three requested resource assessments for Marine Protected Areas.

Performance Summary and Analysis of Program Activity

Risks related to natural resource ecosystems and human health are an increasingly important issue both domestically and internationally. NRCan plays a key role in supporting environmental responsibility in the development and use of natural resources through the dissemination of knowledge (e.g., forest ecosystems characteristics), innovation in green mining, strong environmental assessment processes and radioactive waste management to mitigate ecosystem risks.

Key Achievements in 2011-12

- Improved the understanding of forest management activities on forest ecosystems by providing scientific knowledge to manage risks and minimize the impact of forest resource

development through the:

- Continued development of the National Forest Carbon Monitoring, Accounting and Reporting System[90] used for estimating forest-related carbon stock changes and greenhouse gas emissions. This work included the addition of a model to estimate carbon in harvested wood products and contribution to the UN Framework Convention on Climate Change.
- Publication on the internet of the National Forest Inventory (NFI), which enables Canadians to access and query map products, including information on stewardship of forest resources. This work included important updates on new economic and biophysical information on Canada's forests to support policy development and to provide science-based information on forest sustainability.

- Continued to reduce the environmental impacts of mining through the Green Mining Initiative in collaboration with partners. For example, the Green Mining Initiative:
  - Delivered on the first phase of the Ventilation on Demand project, including the introduction and commercialization of hybrid production vehicles, with the Canadian Mining Innovation Council and industry;
  - Initiated studies on ore sorting technology to reduce waste generation and energy consumption in mineral processing as well as identifying environmental challenges associated with mining specific ore deposit(s) in the Northern context;
  - Completed a multi-stakeholder workshop to assess regulatory barriers to green mining; and
  - Completed a multi-stakeholder workshop under the National Orphaned and Abandoned Mines Initiative[91] (NOAMI), exploring the management and long-term liabilities of the relinquishment of mining lands to the Crown.
- Established long-term management solutions for radioactive waste for which the federal government has responsibility. During 2011-12, NRCan was instrumental in:
  - Facilitating the Implementation Phase of the Port Hope Area Initiative, for which the government announced approval in January 2012. The clean-up phase will be carried out through two projects to address radioactive wastes – Port Hope Project and Port Granby Project. The implementation of the Port Granby Project has been fully approved and licensed, and acquisitions were made for a new waste management facility. The Port Hope Project has also been approved.
  - Meeting government-approved program milestones for the second phase of the Nuclear Legacy Liabilities Program (NLLP). The NLLP, which aims to safely and cost-effectively reduce legacy liabilities and associated risks at Atomic Energy of Canada Limited sites, achieved all 17 of its milestone with 2 achieved ahead of schedule. This included activities such as the substantial completion of waste management infrastructure at Chalk River Laboratories with the construction of a fuel packaging and storage facility as well as a new shield construction at the Whiteshell Laboratories.
- Divested the AECL CANDU Reactor Division with its continued operation to Candu Energy Inc., a wholly owned subsidiary of SNC-Lavalin. Through the sale in October 2011 to SNC-Lavalin, the Government has delivered on its objective to achieve the best deal possible for AECL's commercial arm, its employees, the nuclear industry and Canadians while

contributing to maintaining the CANDU technology as a safe, effective, and low-emission energy option. Progress was also made on the restructuring of AECL's Nuclear Laboratories in 2011-12.

- Contributed to the federal environmental assessment and reporting process by providing expertise and knowledge to support sustainable and environmentally responsible resource development. Specifically, new geoscience research was conducted to support the environmental impact assessment of mining, covering a range of strategic mineral resources in the Northwest Territories and Nunavut. As well, research activities were conducted within the Environmental Geoscience Program to improve and inform the assessment of environmental impacts.
- Completed mapping and characterization of three Canadian aquifers, which contributed to the longer term target of the mapping and assessment of seven aquifers by March 2014. Groundwater geoscience is conducted in collaboration with provinces and territories to support sound decision-making on groundwater management issues by government, industry and Canadians.

Lessons Learned

Port Hope Area Initiative

The Port Hope Area Initiative (PHAI), a community-based initiative established to develop and implement a safe, local, long-term management solution for historic low-level radioactive waste in the Port Hope area, was also evaluated in 2011-12. The evaluation[92] found that PHAI remains relevant, is addressing an ongoing need, and is conducted in a cost-effective manner, considering regulatory requirements, public perception and best available technology. As a result of the evaluation, NRCan has:

- Developed several frameworks aimed at resolving issues related to both PHAI technical issues and communication ties with the local communities.
- A Municipal Expediting Team (MET) will be established in the Municipality of Port Hope to facilitate consultations among the PHAI Management Office (MO), contractors and municipal staff to expedite project completion.
- Launched an independent assessment of the terms and conditions of the Property Value Protection program; this assessment will be used to strengthen the eligibility criteria to increase the effectiveness of the program.

NRCan and the PHAI MO will produce a communications program for residents in the communities to ensure the revised terms and conditions are well understood. Finally, a review of property files and resurvey of Port Hope properties is being undertaken to improve the level of site characterization and to mitigate later risks associated with the discovery of new contamination.

Nuclear Legacy Liabilities Program

In 2011-12, an evaluation[93] was conducted on the Nuclear Legacy Liabilities Program, which is a program that is implemented through a memorandum of understanding between NRCan and AECL. The evaluation concluded that there is an environmental and regulatory need for the

Program, and that it is consistent with and supports the federal government's priorities, as well as NRCan's strategic objectives.

Based on the recommendations of the evaluation, NRCan has strengthened its oversight of the NLLP. For example:

- An ADM-level Steering Committee has been established that includes senior NRCan, AECL, and Canadian Nuclear Safety Commission representatives to provide strategic oversight.
- NRCan has increased its presence at AECL sites through site visits and participation in project-level meetings and workshops.
- A new monthly reporting requirement has been instituted, which includes key program metrics, summaries of progress, issues and mitigating actions. As well, risk management.

As well, risk practices have been improved, and AECL is implementing an action plan to enhance its procurement processes to support NLLP outsourcing requirements.

Links with the Federal Sustainable Development Strategy (FSDS)

Ecosystem Risk Management activities, specifically Forest Ecosystem Science and Adaptation (2.2.2), support Theme III (Protecting Nature). NRCan is the lead on FSDS Target 7.3 (Sustainable Forest Management) to improve the management of Canada's forest ecosystems through the development and dissemination of knowledge, detailed further below. This theme is also supported by contributions to federal environmental assessment processes for national parks and other protected areas. (2.2.3)

Activities such as radioactive waste management through the Port Hope Area Initiative and Groundwater Geoscience support FSDS Theme II (Maintaining Water Quality and Availability). Key highlights of contributions to this area include:

- Supporting the management of Canadian Areas of Concern in the Great Lakes by responding to community-recommended solutions for the clean-up and long-term safe management of historic low-level radioactive waste. (2.2.4)
- Improving the knowledge of Canada's aquifers through mapping and assessment to provide knowledge and support improved water management practices as well as supporting sound assessments of marine conservation areas. (2.2.3)

As well, activities in this area contributed to Theme I goals of reducing GHG emission and improving air quality, such as the Green Mining Initiative, which is encouraging the use of alternative energy vehicles in the mining sector, promoting the use of clean-diesel technology, and supporting the development of bio-energy feedstocks. (2.2.1)

Programming in this area that contributes to the Federal Sustainable Development Strategy (FSDS)

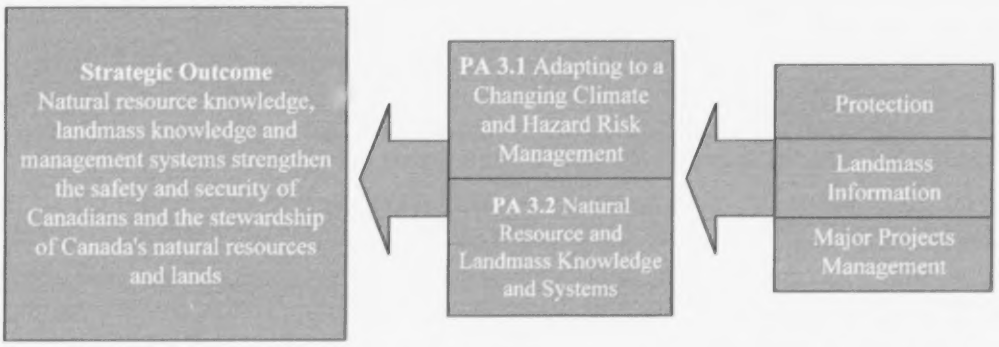
The Target 7.3 results supported by NRCan's sub-activity 2.2.2 Forest Ecosystems Science and Applications include:

FSDS Goal	FSDS Performance Indicator	FSDS Target	FSDS Actual Results
7 Biological Resources	Number of peer reviewed publications related to forest ecosystems (*)	7.3 Sustainable Forest Management - Improve the management of Canada's forest ecosystems through the development and dissemination of knowledge (**)	NRCan continues to increase scientific knowledge on forest ecosystems by contributing to knowledge for stakeholders on forest sustainability, which helps to improve Canada's environmental reputation and benefits our economic competitiveness. NRCan produced 224 peer-reviewed publications over the three years in question (fiscal years 2009-10 to 2011-12). This indicator was extracted from the NRCan Performance Measurement Framework. This indicator was designed to enable NRCan's scientific work to inform clients and stakeholders on sustainable forest management practices. Generating and disseminating scientific knowledge related to forest ecosystems is based on publications that have been peer reviewed. Peer reviewed publications are the accepted standard for ensuring that the analysis is scientifically sound, and for informing policy grounded in sound science.

* NRCan does not share responsibility for this indicator with any other department.

** NRCan does not share responsibility for this target with any other department.

Strategic Outcome 3: Safety, Security and Stewardship


Strategic Outcome
Natural resource knowledge, landmass knowledge and management systems strengthen the safety and security of Canadians and the stewardship of Canada's natural resources and lands
PA 3.1 Adapting to a Changing Climate and Hazard Risk Management
PA 3.2 Natural Resource and Landmass Knowledge and Systems
Protection
Landmass Information
Major Projects Management

NRCan works to ensure the safety and security of Canadians and the stewardship of their natural resources by:

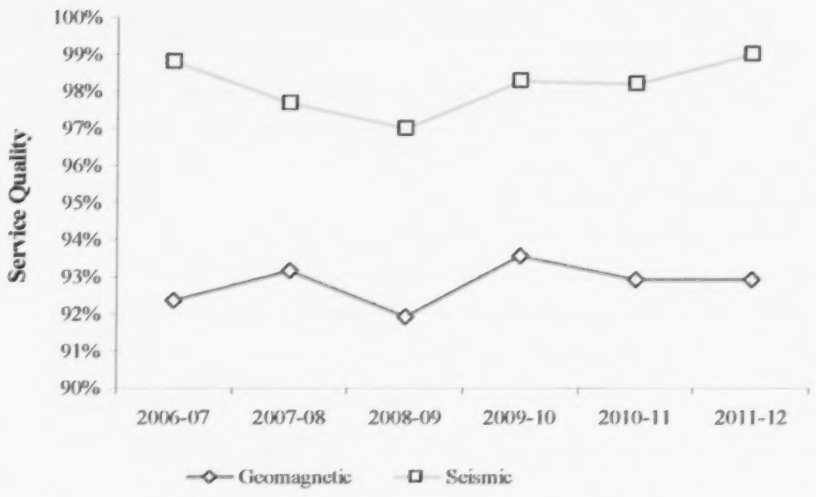
- Contributing to the mitigation of risks associated with the effects of climate change and hazards, such as wildfire, earthquakes, and floods;
- Supporting an improved understanding of the Canadian landmass, geography, and boundaries as well as collaboration on the North to encourage sustainable resource development and protection of the North; and
- Improving the efficiency and the effectiveness of the federal regulatory review process for major projects.

Program Activity 3.1: Adapting to a Changing Climate and Hazard Risk Management

(a) Expected Result: **Canada adapts to a changing climate and has the knowledge and tools to manage risks associated with natural hazards and hazards arising from human activities**

The program activity provides geoscience and geospatial information that contributes to the reduction of risks from natural hazards, such as earthquakes, tsunamis and floods, as well as hazards arising from human activities, and works with front-line responders to provide geographical information in the event of an emergency. The program activity also provides information that will help Canadians mitigate and adapt to the effects of a changing climate and enforces the *Explosives Act*[94].

2011-12 Financial Resources ($ millions)			2011-12 Human Resources (FTEs)		
Planned Spending	Total Authorities	Actual Spending	Planned	Actual	Difference
63.6	55.4	50.8	552	436	(116)

Performance Indicator	Results
NRCan's contribution to natural hazard risk management as measured by the timeliness and accessibility of natural hazard risk management knowledge[95].	**Service Quality for Canadian Hazard Information** 
Target	
Greater than 90% of natural hazard data meet timeliness and accessibility standards.	NRCan has contributed to management of natural hazards through the posting of geomagnetic[96] and seismic[97] information on external websites. Since 2006-07, NRCan has consistently exceeded targets for timeliness and accessibility. The provision of this information helps other levels of government, international government bodies, the private sector and professional organizations to prepare for and mitigate natural disasters and make decisions for the effective management of Canada's lands.

Performance Summary and Analysis of Program Activity

Governments need information about the effects of climate change to better understand how to adapt to it. Collaboration among decision-makers at different levels must then be facilitated to allow for the identification of mitigation strategies and long-term planning for different regions (e.g., North) and natural resource sectors.

A number of programs under this program activity provided knowledge on climate change and successfully brought together different levels of government in 2011-12.

Key Achievements in 2011-12

- Pre-published new proposed explosives regulations in the Canada Gazette on March 17, 2012[98]. The regulations cover a wide range of explosives from fireworks to model rockets to blasting explosives.
- Facilitated collaboration on climate change adaptation and planning by:
  - Delivering 27 workshops and conference sessions, through six Regional Adaptation Collaboratives (RACs), which brought together decision-makers from all levels of government and the private sector to share knowledge and expertise to advance adaptation decision-making on issues such as water management, community planning, infrastructure,

forest management, and mining. The information and recommendations from RAC projects contributed to the development of policies, including provincial climate adaptation guidelines for Nova Scotia's municipalities and adaptation plans to address floods and droughts in Saskatchewan and other provinces.

- Completing a state-of-the-art knowledge synthesis on assisted tree migration, establishing a pan-Canadian forestry adaptation community of practice, and conducting national workshops and webinars with forest managers to accelerate the incorporation of climate change adaptation into forest management policies and practices in Canada.
- Building on the success of the RACs initiative, the Climate Change and Adaptation Program launched the Adaptation Platform in March 2012. The platform brings together governments, the private sector and other stakeholders to share information, experience and expertise, generate new insights and knowledge and identify opportunities for adaptation actions.
- Initiating three projects in Spring 2011 to produce geoscience knowledge and information to be used by governments (e.g., Northwest Territories, Nunavut) and stakeholders (e.g., highway and airport managers) to reduce risk to northern infrastructure and help develop adaptation measures to climate change.

- Delivered essential geographic and geoscience information and support, most notably in the area of public safety geoscience, which included:
  - Using scientific research to inform Canadians of the risks associated with both natural (e.g., earthquakes) and man-made hazards (e.g., explosives) and how to adapt to them. Scientific expertise was also used to inform policies and regulations to protect the population from hazards.
  - Improving the ability to respond to the public interest on earthquakes by providing up-to-date earthquake information through Twitter and other forms of social media. Also, the Earthquakes Canada web-presence was moved to a high-capacity commercial content delivery system.
  - Improving NRCan's Wildland Fire Information System[99], which had 107,000 hits in 2011 from a range of users, including citizens, researches, and news operations (e.g., CBC, Global News, The Weather Network), which use the system to monitor fire activity and risks, aid fire operations, and conduct research. Specifically, it was improved by adding the Spatial Fire Management System that allows provinces and territorial fire management agencies to modify the system to their particular needs. In addition, an enhanced fire danger rating system was developed to predict fire impacts on biomass and vegetation response in western North American forests. Fire impact monitoring was also improved by the development of a national reporting system.
- Continued forestry research that informs risk analysis, mitigation and control methods for high-priority native and alien forest insects and disease. The resulting advice, tools and knowledge have enabled the Government to improve surveillance, detection, identification, mitigation and control of pests. Examples of accomplishments are:
  - The pending declaration of eradication of the Asian Long Horned Beetle from Toronto, where the beetle was discovered in 2003;
  - The development of climate prediction maps for Spruce Budworm and Mountain Pine

Beetle infestation risks, which assist provinces in optimizing their mitigation control means;

- A biological pesticide against the Emerald Ash Borer; and
- A rapid detection method of the plant pathogen causing sudden oak death.

Lessons Learned

Climate Change Geoscience and Adaptation (CCGA)

In 2011, an evaluation[100] was conducted on the Climate Change Geoscience and Adaptation (CCGA) sub-activity. This sub-activity assists Canadians in understanding, preparing for, and adapting to the effects of a changing climate on their communities, infrastructure and way of life. The evaluation found that the programs are highly relevant, address ongoing needs and are making progress toward their outcomes. The evaluation also found that the relevance and effectiveness of the Climate Change Geoscience program could be increased through improved collaboration with the Impacts and Adaptation program and other NRCan programs.

In response to the evaluation findings, the Climate Change Geoscience Program component of the sub-activity improved its collaboration by participating with NRCan's Energy Sector in the Beaufort Regional Environmental Assessment, which includes the creation of a Coastal Geoscience Data Inventory relevant to hazards and Climate Change Impacts for Coastal Infrastructure on the Beaufort Sea coast. The Adaptation program enhanced linkages through the creation of the Adaptation Platform, which will enable collaboration on adaption between government, business, and professional organizations across the country through the development and exchange of information, tools, and expertise. Work done through the Platform will also create value-added products to integrate, showcase and transfer the results and learning from the previous Adaptation program initiatives.

Forest Disturbances Science and Application

In 2011, an evaluation[101] was completed on the Forest Disturbances sub-activity, which includes the Forest Invasive Alien Species Program, National Forest Pest Strategy[102] Program, the Federal Response to Mountain Pine Beetle Program[103], and the Wildland Fire–S&T Program. The evaluation found that there is a clear rationale for the Forest Disturbances programs and that they were delivered efficiently and have produced outputs that help address the environmental and economic consequences of climate change, fire, and pests. It recommended that NRCan ensure that its forest disturbances research take into account new variables, such as climate change and other important factors, and also includes mitigation options as appropriate. Existing research within NRCan comprises work on climate change, including the interaction between events such as pest infestations and forest fires.

A revised strategic plan for Forest Disturbances has been developed and ensures that new variables in forest disturbances, such as climate change, will be taken into account in Forest Disturbances research and where possible mitigation options will be developed. Provincial partners have also been engaged, which will provide an opportunity for ensuring that research and response take into account new parameters and options for mitigation. As a result, forest sector players have state-of-the-art tools and techniques needed to assess risks, vulnerabilities and opportunities as well as to identify thresholds and develop environmentally sound responses for fire and pests and adaptation options for climate change (adaptation to climate change is any

activity that reduces the negative impacts of climate change and/or takes advantage of new opportunities that may be presented).

Links with the Federal Sustainable Development Strategy (FSDS)

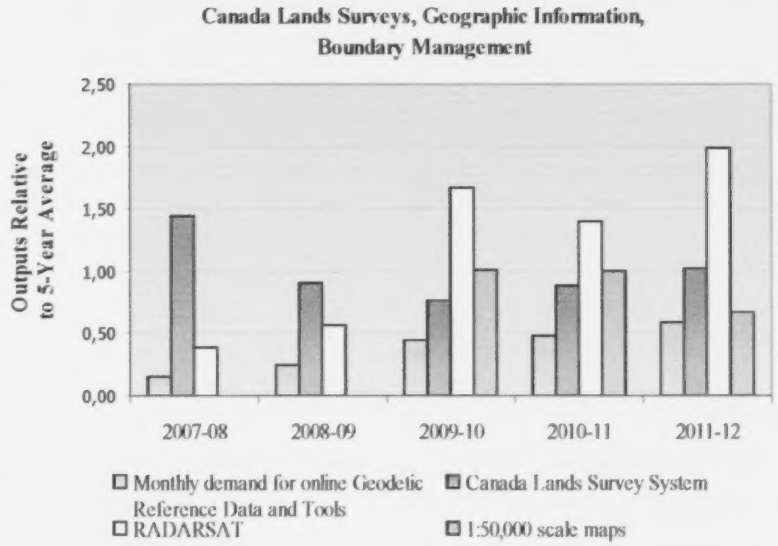
Natural Resource and Landmass Knowledge and Systems activities, specifically the work done under Forest Disturbances Science and Application Program, supports Theme III (Protecting Nature) by helping to manage threats to ecosystems, and aims to reduce new invasive species entering Canada by 2015. (3.1.2)

Program Activity 3.2: Natural Resources and Landmass Knowledge and Systems

Expected Result: **Government has the necessary natural resources and landmass knowledge and systems required to both govern the country and position Canada to play a leadership role in federal/provincial/territorial and international fora.**

This program activity carries out the Minister's obligation to provide a property rights infrastructure on all lands for which the department has this responsibility, along with the provision and access to accurate and precise geographic information on the Canadian landmass. The program activity also includes the Major Projects Management Office which, along with other programs, provides relevant accurate, timely and accessible knowledge with a view to increasing collaborative efforts with other jurisdictions in key areas (e.g., regulatory efficiency) to generate improved approaches to shared issues and to advance the interests of the natural resource sector both domestically and internationally.

2011–12 Financial Resources ($ millions)			2011–12 Human Resources (FTEs)		
Planned Spending	Total Authorities	Actual Spending	Planned	Actual	Difference
84.4	94.2	87.2	616	559	(57)

Performance Indicator	Results
NRCan's contribution to the development and security of Canada through advancements in geographic knowledge, boundary management, and surveys, and supporting systems for secure land tenure of Canada Lands.	
Target	
Fulfilling on-demand requirements.	The Department met the requirements of the Canada Lands Survey System[104] and remote sensing imagery (RADARSAT[105]) (there is no quantitative target because variations in demand are beyond NRCan's control). The outputs of these programs and activities are used by Aboriginal groups, land management specialists, other government departments and Canadians in support of sustainable land use management.

Performance Summary and Analysis of Program Activity

Evidence-based geographic knowledge and information is essential to support decision-making in key economic, environmental, and social activities, including the development of natural resources. For example, without such knowledge, boundaries could not be determined, authoritative land management and development could not be undertaken, and sovereign rights could not be upheld. Geographic information and derived products are made accessible to the Canadian public and private sectors.

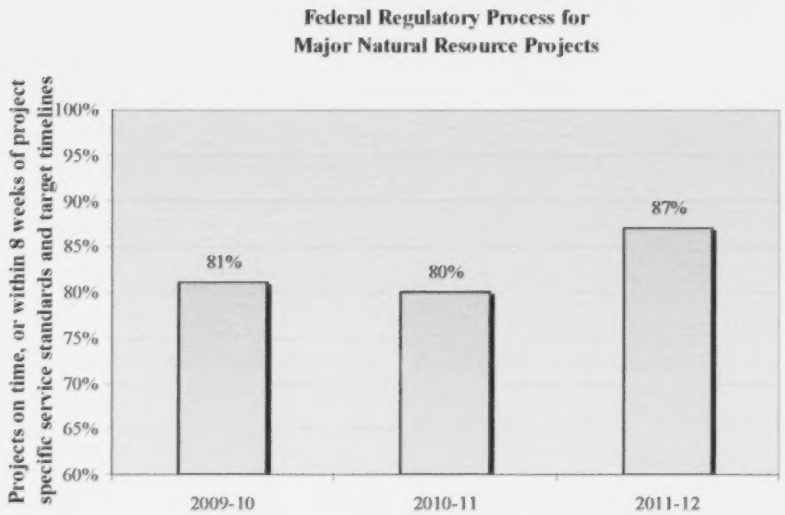
In 2011-12, programs under this program activity accumulated new geographic and landmass information particularly with respect to the North. Progress was also made towards meeting obligations under the United Nations Convention on the Law of the Sea and the Polar Continental Shelf Program[106] **(PCSP)**.

Key Achievements in 2011-12

- Produced 612 topographic maps at the 1:50,000 scale covering parts of Nunavut and Northwest Territories exceeding the original intent to produce 500 maps. This achievement has significantly contributed to the knowledge about potential economic opportunities in these areas. Knowledge of the North was further bolstered by the completion of annual obligations for land claim surveys, including the survey of 97 kilometres of boundary for the

Tlicho Land Claim and 427 kilometres of boundaries for 14 parcels pursuant to the Yukon Land Claims Agreement. There has was also an increase in the downloading of both satellite imagery (by 42%) and geodetic data (by 23%) as compared to the 2010-11 baselines, indicating an increased understanding of the Canadian landmass.

- Prepared coordinates for the Atlantic and continued to develop those for the Arctic under the United Nations Convention on the Law of the Sea to determine with precision the areas in the Arctic and Atlantic Oceans where Canada may exercise its sovereign rights over the natural resources on the continental shelves.
- Delivered on the collaborative agreement between the Polar Continental Shelf Program and the Department of National Defence to establish a Canadian Forces Arctic Training Centre by completing the design phase and initiating the construction phase. The program also provided logistical support to 150 projects during the 2011 field season.

Performance Indicator	Results
Effective management of the federal regulatory process for major natural resource projects as measured by adherence to target timelines and service standards by all federal departments and agencies. **Target** Greater than 80% of active or completed Major Projects Management Office (MPMO) projects are within eight weeks of target timeline.	 Over the course of 2011-12, the MPMO indicator that measures progress in meeting project review timelines remained above the 80% target at all times (fluctuating between 84% and 90%). At the end of the fiscal year, 48 of the 55 active project reviews (87%) were within 8 weeks of their individual target timeline, exceeding the target of 80%. This demonstrates an upward trend. On average, federal reviews of all active projects were within 2.5 weeks of their target.

Performance Summary and Analysis of Program Activity

Effective management of the federal regulatory process for major natural resource projects is dependent upon addressing challenges that hinder the timely and predictable delivery of projects (e.g., duplication of work). In support of this, the Major Projects Management Office (MPMO)

continued to improve the efficiency and effectiveness of Canada's regulatory system by supporting the development of a suite of legislative, regulatory and policy measures to modernize the review of major projects across Canada.

Key Achievements in 2011-12

- Advanced the development of a suite of legislative, regulatory and policy measures aimed at delivering predictable and timely project reviews, including reduced duplication, strengthened environmental protection and enhanced Aboriginal consultations. These measures were introduced though Budget 2012 as part of the Government's plan for Responsible Resource Development, which seeks to modernize Canada's regulatory system for major projects.
- Continued to ensure the effective oversight of federal reviews of MPMO projects through a robust performance management system, including:
  - The development of project agreements signed by federal Deputy Heads, which contain milestones and target timelines for each project review;
  - Publicly monitoring the progress of federal departments in meeting project review timelines; and
  - Weekly and monthly reporting to deputy heads to ensure issues are effectively managed.
- Supported Aboriginal Affairs and Northern Development Canada in its development of a suite of policy proposals to strengthen northern regulatory regimes and align policy approaches both North and South of the 60th parallel.

Lessons Learned

Major Projects Management Office Initiative

An evaluation[107] was carried out to assess all objectives and activities of the MPMO Initiative, including those undertaken by MPMO as well as other federal departments and agencies involved in this horizontal initiative.

The evaluation found that the MPMO Initiative is well-aligned with the federal government's priorities and NRCan's mandate and objectives, as well as with the mandates and strategic objectives of participating departments and agencies (whether or not funded by the MPMO Initiative). The findings also indicated that there is a continued need for the MPMO Initiative, in addition to a number of recent operational and policy improvements consistent with the Initiative's objectives.

Recommendations that emerged from the evaluation focussed on alignment and reducing the overlap of federal and provincial review processes; horizontal coordination, integration, communication and effectiveness of Aboriginal consultations; monitoring and reporting on the quality and effectiveness of project review processes and outcomes; and stakeholder outreach and engagement activities, including communication of its results more clearly within and outside the federal government.

Many of these recommendations have been or are being addressed through the various key achievements that have been accomplished by the program this year, as highlighted in the preceding section, and others will be implemented as part of the Management Response Action Plan that is currently underway.

Extended Continental Shelf Program

As a signatory to the United Nation Commission on the Law of the Seas (UNCLOS), Canada is required to prepare and present its submission to the Commission on the Limits of the Continental Shelf (CLCS). This horizontal program is delivered by DFAIT and DFO and NRCan is responsible for the provision of geoscience to address Canada's preparation for its submission to the CLCS under UNCLOS. A recent evaluation[108] of the program covered $74.4 million of funding from 2009 to 2011 ($50.4 million for NRCan). This funding supported scientific work for Canada's submission to CLCS to delineate the outer limits of its continental shelf. The evaluation confirmed that the Program is on track to complete a Canadian submission to the CLCS by December 2013 as planned.

The major recommendation that emerged from the evaluation was that all departments contributing to UNCLOS address future human resource and financial resource challenges before and after submitting to the CLCS, and develop a plan.

In response, NRCan is developing and will put in place a draft succession plan by 2012. This will include the staffing or re-assignment of key positions, thereby enabling the orderly transition and transfer of knowledge to ensure the overall success of the program. The staffing plan will also address the issue of a backup for a science manager with an in-depth knowledge of the interpretation of the scientific data. In addition, NRCan will maintain sufficient expertise in marine and energy geoscience capacity, specifically in the development of continental margins. This expertise can be drawn upon by the program during the next phases of the submission process.

Program Activity 3.3: Geomatics Canada Revolving Fund

Expected Result: The demand by NRCan, other government departments and industrial clients for revolving fund products and services is met through full cost recovery

The Geomatics Canada Revolving Fund[109] (GCRF) was established under Appropriation Act No. 3 in 1993-94 to effectively respond via contracts and/or in partnership with industry to ongoing domestic and major international opportunities. During negotiations to establish the GCRF, an analysis of the revenue spending authority concluded that the Revolving Fund mechanism would increase Geomatics Canada's ability to carry out both the strategic and public good aspects of its mandate, while allowing for full cost recovery. These activities result in geomatics products, services, and expertise that can be exploited commercially. Revenue-generating activities further build on this work to produce saleable products or services for specific clients in the federal government, Canadian industry, Canadian public, provinces, territories, and other countries.

2011-12 Financial Resources ($ millions)			2011-12 Human Resources (FTEs)		
Planned Spending	Total Authorities	Actual Spending	Planned	Actual	Difference
0	7.6	0.44	-	-	-

Program Activity 4.1: Internal Services

Internal Services support NRCan in delivering its mandate and priorities through three main categories: governance and management support, resource management services, and asset management services. The key to the effectiveness and efficiency of this program activity has been the ability of internal services to adjust and respond to evolving business priorities and requirements. This has allowed the Department to better align its priorities to those of Canadians, its activities to its priorities, and its resources to its activities. It has also increased its capacity to monitor the financial and non-financial performance of its activities and programs.

In 2011-12, the Department made further progress on integrated management by implementing a new governance structure with clear accountabilities; improving performance measurement and risk management; implementing a new financial system (SAP) to support improved business processes; conducting strategic recruiting efforts and strengthening employee performance management; launching NRCan's new values and ethics code; and implementing initiatives to improve official languages, employment equity, and access to information.

The Department has also made additional progress on its medium-term corporate priorities (Asserting our policy leadership, Mobilizing our science and technology, Transforming our business, and Growing our human capital) to ensure that it focuses on developing its capacity, responsiveness and resilience to maximize its contribution to the Government of Canada and to Canadians.

2011-12 Financial Resources ($ millions)			2011-12 Human Resources (FTEs)		
Planned Spending	Total Authorities	Actual Spending	Planned	Actual	Difference
162.5	271.7	251.7	1096	1301	205

Greening Government Operations (GGO)

NRCan is a participant in the Federal Sustainable Development Strategy (FSDS) and contributes to the Greening Government Operations targets through the Internal Services program activity. The department contributes to the following target areas of Theme IV (Shrinking the Environmental Footprint – Beginning with Government) of the FSDS: buildings, greenhouse gas emissions, electronic waste, printing unit reduction, paper consumption, green meetings and green procurement.

For additional details on NRCan's Greening Government Operations activities, see the List of Supplementary Information Tables in Section III.

Greening Government Operations Highlights

- In 2011-12, NRCan made significant progress on its commitment to improve the environmental performance of its operations, through:
- NRCan's Low-Carbon Initiative continued to target the reduction in energy consumption and greenhouse gas emissions within its buildings and other sources.
- NRCan's Printer Optimization Strategy has reduced the number of printers per employee, thus reducing energy consumption, generating cost savings, and ensuring value for money for Canadians.

Changes to Government Structure

Shared Services Canada

Order in Council P.C. 2011-0881[110] established Shared Services Canada as a department, effective August 4, 2011. Subsequent Orders in Council, P.C. 2011-0877 and P.C. 2011-1297, transferred the control and supervision of certain portions of the federal public administration related to information technology infrastructure services.

Natural Resources Canada, was one of the 43 departments named in the Orders in Council P.C. 2011-0881, P.C. 2011-0877 and P.C. 2011-1297 (dated August 3, 2011, and November 15, 2011). The table below provides information regarding the resources transferred to Shared Services Canada and the expenditures it incurred on behalf of SSC.

Impacts on Financial and Human Resources Resulting from the Establishment of Shared Services Canada

2011–12 Financial Resources ($ millions)

	Planned Spending	Total Authorities*
Net transfer post Orders in Council (OIC)** to Shared Services Canada	14.7	14.7

* Pursuant to section 31.1 of the *Financial Administration Act* and Orders in Council P.C. 2011-0881, P.C. 2011-0877 and P.C. 2011-1297, this amount was deemed to have been appropriated to SSC, which resulted in a reduction in the appropriation for Natural Resources Canada.

** Total authorities, as presented in the "2011-12 Financial Resources" table (and other relevant tables) in the "Summary of Performance" section, is the net of any transfers to SSC. Actual spending does not include expenditures incurred on behalf of SSC as of the OIC date.

Delivering on Canada's Economic Action Plan (EAP)

NRCan received funding for new and expanded initiatives to deliver on Canada's EAP, as part of Budget 2009. Total funding received for 2011-12 for EAP initiatives was $189.5 million, of which the Department spent $130.7 million, or 69%. EAP initiatives, along with their respective budgets and expenditures as of March 31, 2012, are presented below.

Expected Results	Indicators	2011-12 ($ million)	
		Budget	Actual
Clean Energy Fund			
Support the development and demonstration of clean energy technologies	- Number of demonstrated technologies that meet or surpass current best technologies - Number of knowledge products made available to codes and developed standards - Number of technology demonstrations leading to commercialization (long-term outcome)	164.6	111.5

Performance Summary:

Design work has commenced on two large-scale demonstration projects announced in 2009-10: the Shell Quest carbon capture and storage (CCS) project and Enhance Energy's Albert Carbon Trunk Line project. Both projects made significant progress, advancing detailed engineering work and obtaining a number of key regulatory approvals, including completing environmental assessments, to move to the construction phase in 2012-13. These projects are expected to commence operations in 2014 (Enhance) and 2015 (Shell) and result in more than two megatonnes of CO_2 emission reduction annually.

In addition, 19 small-scale renewable and clean energy projects are under way. An estimated 735 tonnes of carbon dioxide (CO_2) emissions were determined to have been avoided by the projects in this year. The Clean Energy Fund project located at the University of British Columbia was one of three finalists at the 2012 GLOBE sustainable world business summit in the Technology Innovation and Application category. During the past year, Hydro Québec estimated that its Clean Energy Fund project enabled the savings of 8,800 MWh of electricity and the project's electric vehicles travelled 205,000 km, saving 12,700 litres of gasoline, and provided the utility with valuable information on electric vehicle recharging technology.

The Clean Energy Fund also supported a range of projects from basic research to pre-demonstration pilot projects that federal departments and agencies carried out in collaboration with provinces, research organizations, universities and the private sector in 2011-12. The 56 research projects conducted related to i) Smart Grid, Renewable and Clean Energy, ii) Environmental Challenges Facing Oil Sands Production and the Conversion of Bitumen, iii) Hydrogen and Fuel Cells and iv) CO_2 Capture and Storage.

Expected Results	Indicators	2011-12 ($ million) Budget	Actual
Investments in Forest Industry Transformation (IFIT)			
Support forest industry transformation by investing in projects deploying innovative technologies that lead to a more diversified, higher-value product mix including bio-energy and renewable power, as well as biomaterials, bio-chemicals, and next generation building products.	- Program funds committed to selected projects - Total number of proposals received - Total number of project proposals approved - Number of new installations built or modified OR number of new technologies/innovative applications in place at pilot or commercial scale - Percent of project proposals that involve collaboration with other sectors, number of contribution agreements in place - Funds leveraged from other sources	25.0	19.3
Performance Summary: The program's second call for proposals received 57 project applications and, similar to the first call, was highly oversubscribed, bringing the total project value of proposals from both calls to more than $2 billion. Contribution agreements were developed for 4 new projects, and $17.7 million in program funding was provided. These innovative projects selected for implementation demonstrated innovative technologies such as advanced bioenergy production from mill effluent, the production of new engineered fibre mats from forest products residues, process innovation for advanced hardwood flooring manufacturing, and a unique new oriented strand-board technology for production of specialty panels. All of these projects are demonstrating first-in-Canada technologies, with some being demonstrated commercially for the first time in the world. Additional projects are undergoing the program's established due diligence processes in order to invest the remaining program funds. To date, projects selected by IFIT have leveraged more than $60 million of proponent and third party funding, nearly a 3:1 ratio. The projects selected also demonstrate new partnerships and business models in the forest industry, as well as a strong diversity across sub-sectors (e.g., pulp and paper, engineered wood product, biocomposite, and lumber), establishment sizes (from large, integrated companies to small and medium-sized companies), and regions (British Columbia, Alberta, Saskatchewan and Quebec).			

Section III: Supplementary Information

Financial Highlights

The financial highlights are intended to provide a general overview of the Department's financial position and the net cost of operations before government funding and transfers. The financial highlights presented in this section are drawn from Natural Resources Canada's financial statements and have been prepared in accordance with Treasury Board accounting policies, which are based on Canadian generally accepted accounting principles for the public sector.

During 2011, amendments were made to *Treasury Board Accounting Standard 1.2 – Departmental and Agency Financial Statements*[iii] to improve reporting by government departments. This resulted in significant changes to the Department's financial statements and required restatement of 2010-11 comparative information.

Condensed Statement of Financial Position (Unaudited) As at March 31, 2012 ($ millions)			
	Change %	2011-12	2010-11 (Restated)
Total net liabilities	10%	2,361	2,145
Total net financial assets	15%	928	806
Departmental net debt	**7%**	**1,433**	**1,339**
Total non-financial assets	-5%	314	330
Departmental net financial position	**11%**	**(1,119)**	**(1,009)**

Total net liabilities have varied from $2.145 billion in 2010-11 to $2.361 billion in 2011-12 resulting in a net increase of $217 million (10%). $205 million of that $ 217 million is attributable to: an increase in transfer payment holdbacks ($119 million), a liability to the Province of Nova Scotia in relation to the Crown Share Adjustment payments under the *Canada-Nova Scotia Offshore Petroleum Resources Act* ($66 million), and an accrued liability for the estimated workforce adjustment costs related to a departmental restructuring and to *Canada's Economic Plan 2012* ($20 million). This increase is offset by a decrease of $11 million in employee future benefits mainly due to the elimination of severance pay for certain groups of government employees in 2011-12.

Total net financial assets have increased by $122 million or 15% (from $806 million in 2010-11 to $928 million in 2011-12). The increase is mainly attributable to the increase in the account

Due from Consolidated Revenue Fund (CRF) of $121 million, which represents cash the Department is entitled to draw from without further appropriations. The increase in the transfer payment holdbacks is the main contributor to the increase in the account Due from CRF.

The overall change in total net liabilities and total net financial assets are then reflected in the Departmental net debt.

Total non-financial assets, which include prepayments, inventory and tangible capital assets, varied from $330 million in 2010-11 to $314 million in 2011-12, resulting in a net decrease of $16 million. A decrease of $24 million in prepayments in transfer payments offset by a net increase of $8 million in tangible capital assets explains that variance. This $8 million net increase is the result of a $16 million increase in the assets under construction reduced by the $8 million transfer of tangible capital assets to Shared Service Canada on November 15, 2011, whereby the Department transferred to SSC the responsibility for providing email, data centre and network services.

The total non-financial assets are then subtracted from the Departmental net debt to reflect the Departmental net financial position.

Condensed Statement of Operations and Departmental Net Financial Position (Unaudited) For the Year Ended March 31, 2012 ($ millions)			
	Change %	2011-12	2010-11 (Restated)
Total expenses	-32%	3,460	5,070
- Total revenues	-29%	25	36
+ Transferred operations	-43%	15	26
Net cost of operations before government funding and transfers	**-32%**	**3,450**	**5,060**
Departmental net financial position	**11%**	**(1,119)**	**(1,009)**

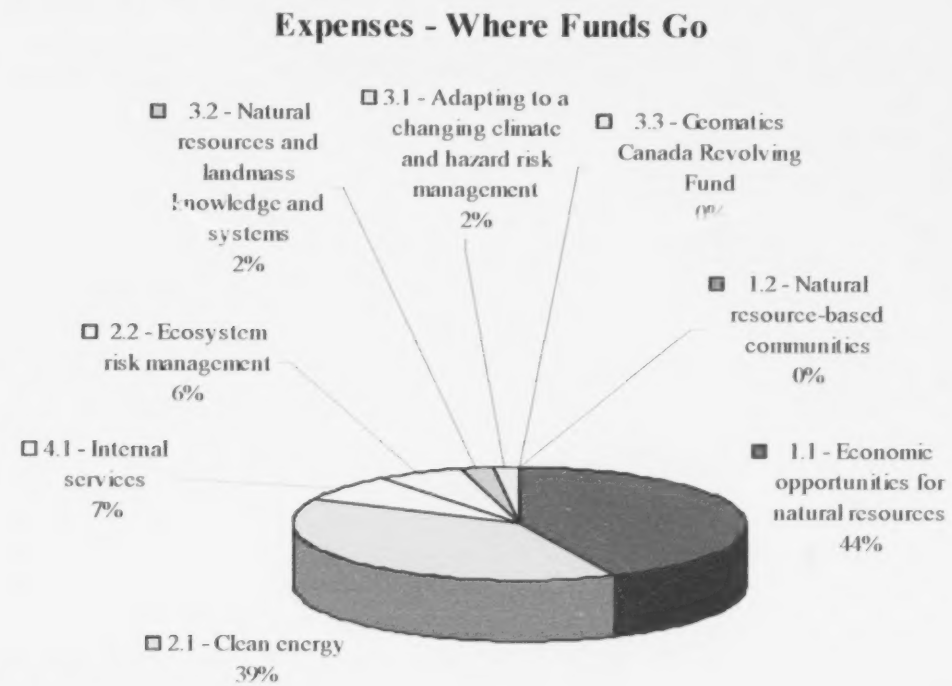
Total expenses were $5.070 billion in 2010-11 compared to $3.460 billion in 2011-12 for a net decrease of $1.61 billion or 32%. This decrease is attributable to transfer payment programs for $813 million and to operating expenses for $796 million. The most significant decreases in transfer payments from 2010-11 to 2011-12 are attributable to the Newfoundland Fiscal Equalization Offset Payments ($642 million, which terminated in 2010-11), to the Newfoundland Offshore Petroleum Resource Revenue Fund ($168 million) and to ecoENERGY Retrofit – Homes ($159 million). Those decreases were offset by increases in Pulp and Paper Green Transformation Program ($116 million) and ecoENERGY for Renewable Power program ($37 million). The decrease in operating expenses is mostly due to the reduction of $778 million in environmental expenses from 2010-11 to 2011-12.

Total revenues have slightly decreased by $11 million from $36 million in 2010-11 to $25 million in 2011-12.

Transferred operations represent the transfer by the Department to SSC on November 15, 2011, of the responsibility for providing email, data centre and network services. For 2010-11, the $25.9 million is the estimated expenses for email, data centre and network services incurred by the Department. For 2011-12, the $14.8 million represents the expenses incurred by the Department for SSC's activities for the period from April 1, 2011, to November 14, 2011, when the transfer of activities to SSC became effective.

Financial Highlights Charts/Graphs

The following chart presents a distribution of NRCan's total expenses in 2010-12 by program activity. Total expenses amounted to $3.46 billion.


Expenses - Where Funds Go
3.2 - Natural resources and landmass knowledge and systems 2%
3.1 - Adapting to a changing climate and hazard risk management 2%
3.3 - Geomatics Canada Revolving Fund
1.2 - Natural resource-based communities 0%
2.2 - Ecosystem risk management 6%
4.1 - Internal services 7%
1.1 - Economic opportunities for natural resources 44%
2.1 - Clean energy 39%

The complete NRCan financial statements and that of the Geomatics Canada Revolving Fund can be found on Natural Resources Canada's[112] website.

Financial Statements

Natural Resource Canada's financial statements are available on-line at:
http://www.nrcan.gc.ca/performance-reports/2011-2012/financial-statements.

List of Supplementary Information Tables

Details on Transfer Payment Programs

Greening Government Operations

Horizontal Initiatives – Improving the Performance of the Federal Regulatory System for Major Natural Resource Projects

Internal Audits and Evaluations

Response to Parliamentary Committees and External Audits

Sources of Respendable and Non-Respendable Revenue

Up-Front Multi-Year Funding

User Fees Reporting

These tables can be found on NRCan's website[113]

Section IV: Other Items of Interest

Organizational Contact Information:

If you have further questions, please do not hesitate to contact us[114].

Endnotes

[1] http://www.nrcan.gc.ca/com/resoress/actacte-eng.php
[2] http://laws-lois.justice.gc.ca/eng/acts/N-20.8/
[3] http://laws-lois.justice.gc.ca/eng/acts/R-7/
[4] http://laws-lois.justice.gc.ca/eng/acts/F-30/
[5] http://www.nrcan.gc.ca/com/deptmini/portf-eng.php
[6] http://www.aecl.ca/
[7] http://www.neb-one.gc.ca/clf-nsi/rcmmn/hm-eng.html
[8] http://nuclearsafety.gc.ca/eng/
[9] http://www.cnlopb.nl.ca/
[10] http://www.cnsopb.ns.ca/
[11] http://www.sdtc.ca/index.php?page=home&hl=en_CA
[12] http://www.appointments.gc.ca/prflOrg.asp?OrgID=ESR&lang=eng
[13] http://www.appointments.gc.ca/prflOrg.asp?OrgID=NPA&lang=eng
[14] http://www.tbs-sct.gc.ca/rpp/2011-2012/inst/rsn/rsn00-eng.asp
[15] http://www.tbs-sct.gc.ca/rpp/2011-2012/inst/rsn/rsn00-eng.asp
[16] http://www.actionplan.gc.ca/eng/index.asp
[17] http://www.mpmo-bggp.gc.ca/index-eng.php
[18] http://www.actionplan.gc.ca/en/page/r2d-dr2/responsible-resource-development
[19] http://www2.mpmo-bggp.gc.ca/MPTracker/projectsummary-resumedeprojet.aspx?pid=82
[20] http://www2.mpmo-bggp.gc.ca/MPTracker/projectsummary-resumedeprojet.aspx?pid=206
[21] http://www2.mpmo-bggp.gc.ca/MPTracker/projectsummary-resumedeprojet.aspx?pid=112
[22] http://www2.mpmo-bggp.gc.ca/MPTracker/Project-Projet-01.aspx?PID=110
[23] http://www.nrcan.gc.ca/evaluation/reports/2012/6323
[24] http://cfs.nrcan.gc.ca/pages/166
[25] http://www.valuetowood.ca/html/english/index.php
[26] http://cfs.nrcan.gc.ca/pages/265
[27] http://cfs.nrcan.gc.ca/pages/266
[28] http://www.nrcan.gc.ca/earth-sciences/about/current-program/targeted-geoscience/previous-initiatives/3723
[29] http://www.nrcan.gc.ca/minerals-metals/technology/4473
[30] http://www.nrcan.gc.ca/minerals-metals/business-market/4048?destination=node%2F4048
[31] http://www.nrcan.gc.ca/minerals-metals/publications-reports/4339?destination=node%2F4339
[32] http://www.nrcan.gc.ca/minerals-metals/publications-reports/4425
[33] http://www.nrcan.gc.ca/minerals-metals/publications-reports/4413
[34] http://ecoaction.gc.ca/index-eng.cfm
[35] http://www.nrcan.gc.ca/ecoaction/
[36] http://oee.nrcan.gc.ca/residential/6551
[37] http://canmetenergy.nrcan.gc.ca/buildings-communities/communities/1603
[38] http://geoscan.ess.nrcan.gc.ca/cgi-bin/starfinder/0?path=geoscan.fl&id=fastlink&pass=&format=FLFULL&search=R=288745
[39] http://canmetenergy.nrcan.gc.ca/renewables/marine-energy/2346
[40] http://cfs.nrcan.gc.ca/pages/231
[41] http://www.nrcan.gc.ca/energy/sources/uranium-nuclear/1264

[42] http://www.nrcan.gc.ca/media-room/news-release/2012/2/3654
[43] http://www.nrcan.gc.ca/earth-sciences/about/current-program/geomapping/7131?destination=node%2F7131
[44] http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=25049
[45] http://laws-lois.justice.gc.ca/eng/acts/O-3.01/
[46] http://www.nrcan.gc.ca/atip/home
[47] http://actionplan.gc.ca/eng/index.asp
[48] http://www.climatechange.gc.ca/dialogue/default.asp?lang=En&n=E47AAD1C-1
[49] http://oee.nrcan.gc.ca/transportation/alternative-fuels/programs/10163
[50] http://www.nrcan.gc.ca/energy/science/programs-funding/1482
[51] http://oee.rncan.gc.ca/node/8251
[52] http://cfs.nrcan.gc.ca/pages/232?lang=en_CA
[53] http://www.tbs-sct.gc.ca/ppg-cpr/frame-cadre-eng.aspx
[54] http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=A91164E0-7CEB-4D61-841C-BEA8BAA223F9
[55] http://cfs-scf.nrcan-rncan.gc.ca/pages/280
[56] The proportion of Canada's land area covered by forest, other wooded land and other land with tree cover is over 43 percent.
[57] http://atlas.nrcan.gc.ca/site/english/learningresources/facts/surfareas.html/
[58] http://cfs.nrcan.gc.ca/pages/64
[59] Ibid note 45.
[60] http://www.ec.gc.ca/dd-sd/default.asp?lang=En&n=F93CD795-1
[61] http://laws-lois.justice.gc.ca/eng/acts/F-8.6/page-1.html
[62] http://www.nrcan.gc.ca/sustainable-development/departmental-strategy/2480
[63] http://laws-lois.justice.gc.ca/eng/acts/F-8.6/page-1.html
[64] http://www.climatechange.gc.ca/dialogue/default.asp?lang=En&n=E47AAD1C-1
[65] http://www.ceaa.gc.ca/default.asp?lang=En&n=B3186435-1
[66] In 2011, the Deputy Minister approved a new internal Directive on Environmental Assessment for NRCan, which updated existing environmental policy on several planes, including providing further specifics on the SEA management process, and referencing the *Federal Sustainable Development Act*, as well as reporting requirements through the main estimates documents cycle.
[67] http://www.nrcan.gc.ca/environmental-assessment-strategic/55
[68] http://www.nrcan.gc.ca/sustainable-development/departmental-strategy/2480
[69] http://www.ec.gc.ca/dd-sd/default.asp?lang=En&n=C2844D2D-1
[70] http://laws-lois.justice.gc.ca/eng/acts/C-7.8/index.html
[71] http://laws-lois.justice.gc.ca/eng/acts/C-7.5/index.html
[72] http://www.nrcan.gc.ca/energy/science/2003
[73] http://www.nrcan.gc.ca/ecoaction/
[74] http://www.tpsgc-pwgsc.gc.ca/recgen/txt/72-eng.html
[75] http://www.tbs-sct.gc.ca/rpp/2010-2011/inst/rsn/rsntb-eng.asp
[76] http://www.nrcan.gc.ca
[77] http://cfs.nrcan.gc.ca/pages/236
[78] http://cfs.nrcan.gc.ca/pages/233
[79] http://www.reseauxfibrenetworks.ca/
[80] http://www.nrcan.gc.ca/evaluation/reports/2011/2782

[81] http://www.nrcan.gc.ca/evaluation/reports/2011/6249?destination=node%2F6249
[82] http://oee.nrcan.gc.ca/publications/statistics/cama11/highlights.cfm?attr=0
[83] http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/data_e/publications.cfm?attr=0#a
[84] https://ecoaction.gc.ca/ecoenergy-ecoenergie/power-electricite/index-eng.cfm
[85] http://www.ecoaction.gc.ca/ECOENERGY-ECOENERGIE/alternative-remplacement-eng.cfm
[86] http://www.nacsap.org/
[87] https://nfi.nfis.org/home.php?lang=en
[88] The indicator measures NRCan's contribution on an on-demand basis to: 1) federal environmental assessment and reporting processes; and 2) Mineral and Energy resource Assessments (MERA) for the potential establishment of national parks and other protected areas.
[89] http://laws-lois.justice.gc.ca/eng/acts/C-15.2/
[90] http://cfs.nrcan.gc.ca/pages/93?lang=en_CA
[91] http://www.abandoned-mines.org/
[92] http://www.nrcan.gc.ca/evaluation/reports/2011/3625
[93] http://www.nrcan.gc.ca/evaluation/reports/2011/2937
[94] http://laws-lois.justice.gc.ca/eng/acts/E-17/
[95] This performance indicator includes two measures: 1) Percent of target geomagnetic data posted to the web after quality control by the Canadian Hazard Information Service (CHIS); and, 2) Percent of target seismic data posted to the web after quality control review by CHIS.
[96] http://www.spaceweather.gc.ca/index-eng.php
[97] http://earthquakescanada.nrcan.gc.ca/hazard-alea/index-eng.php
[98] http://www.gazette.gc.ca/rp-pr/p1/2012/2012-03-17/html/reg1-eng.html
[99] http://cwfis.cfs.nrcan.gc.ca/
[100] http://www.nrcan.gc.ca/evaluation/reports/2011/3642
[101] http://www.nrcan.gc.ca/evaluation/reports/2011/2726
[102] http://cfs.nrcan.gc.ca/pages/345
[103] http://cfs.nrcan.gc.ca/pages/237
[104] As measured by: Number of new cadastral parcels added to the Canada Lands Survey System. Please see: http://clss.nrcan.gc.ca/index-eng.php
[105] As measured by: Remote sensing scene production and client downloads of remote sensing data. Please see: http://www.asc-csa.gc.ca/eng/satellites/radarsat/ecosystem.asp
[106] http://www.nrcan.gc.ca/earth-sciences/products-services/polar-shelf-services/11617
[107] http://www.nrcan.gc.ca/evaluation/reports/2012/6323?destination=node%2F6323
[108] http://www.international.gc.ca/about-a_propos/oig-big/2011/evaluation/cecsp_ppcec11.aspx?lang=eng&view=d
[109] http://www.nrcan.gc.ca/geomatics-fund-2008-09/772?destination=node%2F772
[110] http://www.pco.gc.ca/oic-ddc.asp?lang=eng&txtToDate=&txtPrecis=Shared+Services&Page=secretariats&txtOICID=&txtAct=&txtBillNo=&blnDisplay=&txtFromDate=&txtDepartment=&txtChapterNo=&txtChapterYear=&viewattach=24978&rdoComingIntoForce=&DoSearch=Search+/+List&pg=2&viewattach=24558&blnDisplayFlg=1
[111] http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=18830&section=text
[112] http://www.nrcan.gc.ca/com/resoress/pubpub-eng.php
[113] http://www.nrcan.gc.ca/performance-reports/2011-2012/home
[114] http://contact-contactez.nrcan-rncan.gc.ca/index.cfm?lang=eng&sid=7